JULY 4, 1960

# PAPER TRADE JOURNAL

**Israeli Mill Now Continuously Pulps and Bleaches Cornstalks**

**Air Knife, Trail Blade, Cast? or Which of 9 Coating Methods To Use**

**Woodroom For Celgar's New Mill Posed Unusual Design Problems**

**How Sawdust, Planer Shavings Are Cooked at PFI's Kraft Mill**

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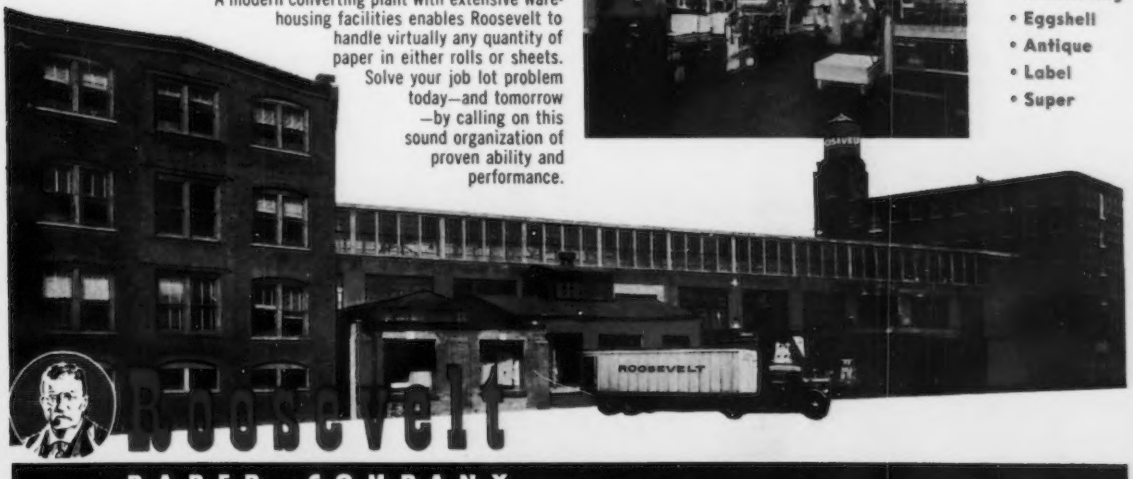


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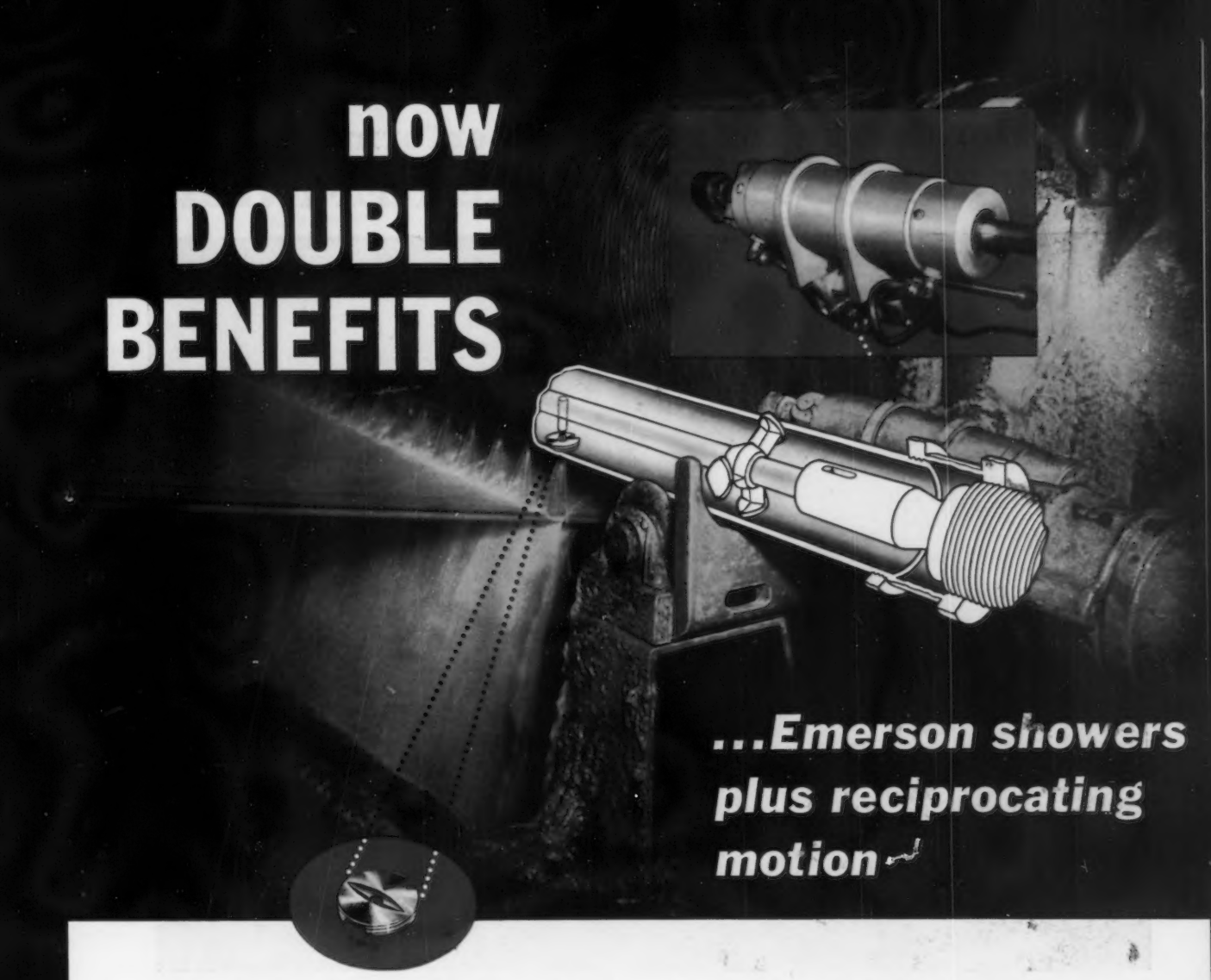

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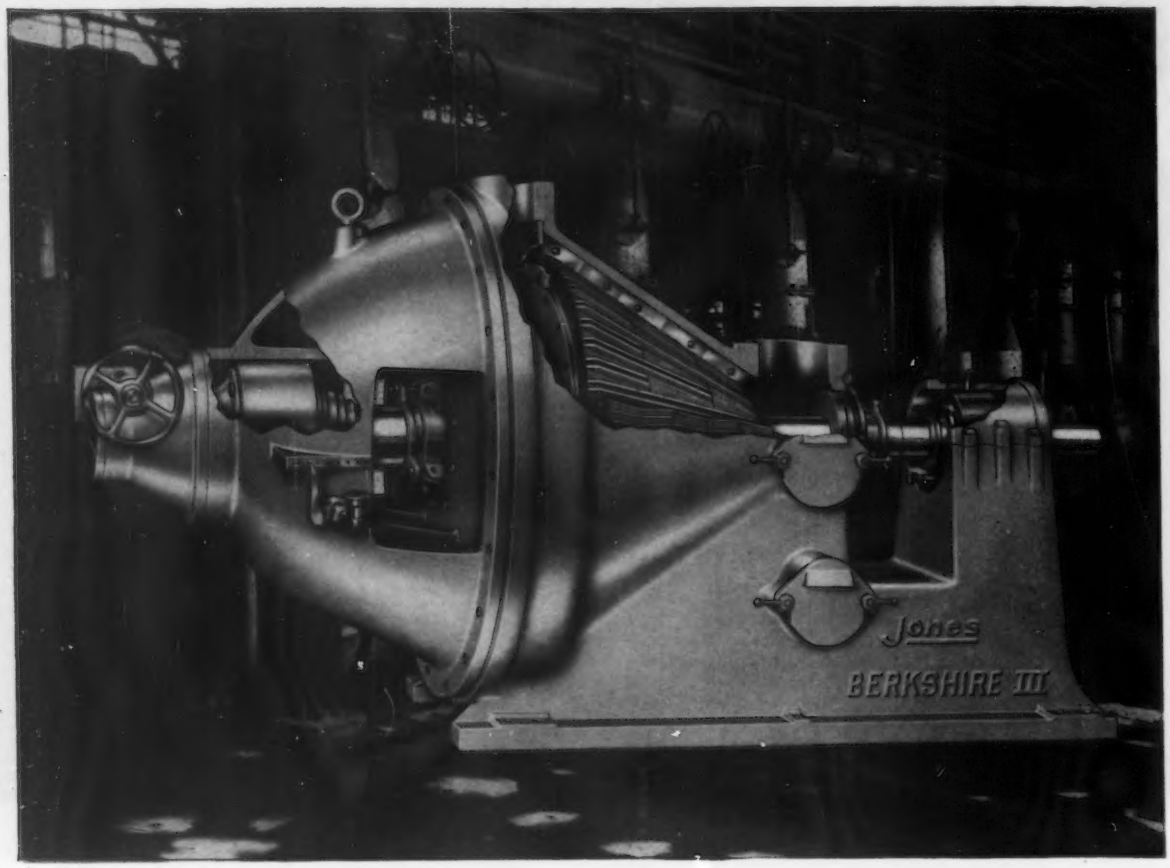


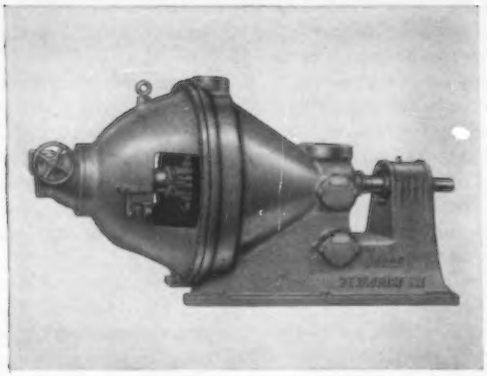

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## REMEMBER THESE DATES

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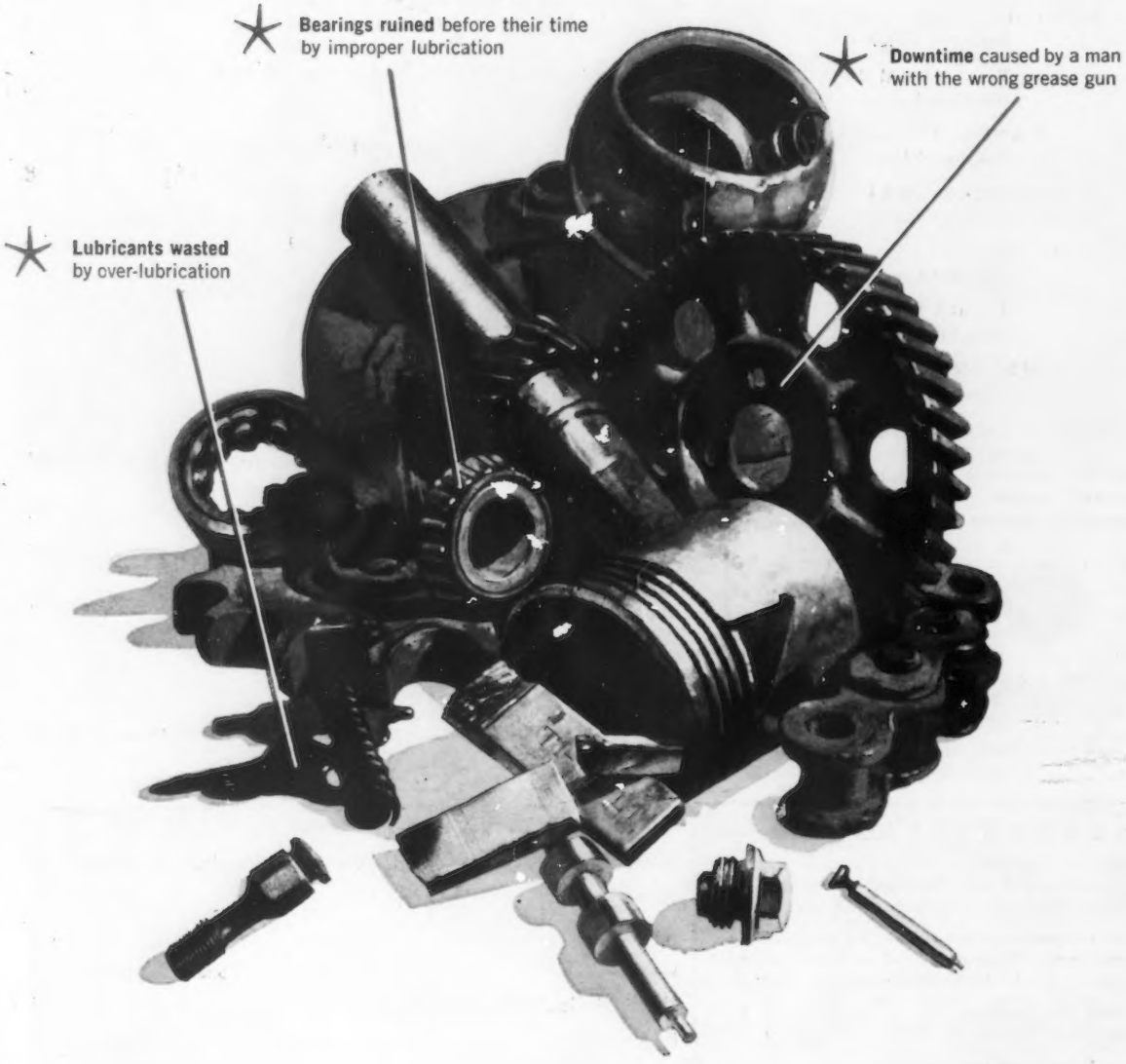
# ANNOUNCING THE TEXACO "Stop Loss" Program

## Created to starve a scrap pile at its source . . . and all it represents ★


★ **Bearings ruined** before their time by improper lubrication
★ **Downtime** caused by a man with the wrong grease gun
★ **Lubricants wasted** by over-lubrication

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

Even though your mill is *already* an efficient operation, a Texaco "Stop Loss" Program can yield important savings in maintenance, production, purchasing and inventory.

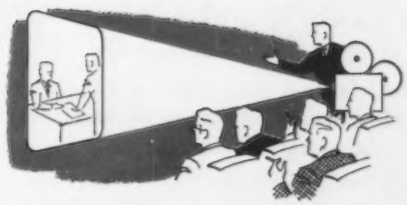
**What it is; why it will work for you.** The Texaco "Stop Loss" Program is a complete package specifically designed to modernize your lubrication practices—to keep pace with your updated production and marketing procedures. "Stop Loss" is based on our years of experience in organizing lubrication in industry.

If yours is an average mill, the adoption of this program will actually show up on your profit sheet. That's because the savings from "Stop Loss" go *directly* into net profits.

Lubrication, far from being an expense item, is actually one of your most effective cost control tools!

## HERE'S WHAT YOU NEED TO HELP STARVE YOUR SCRAP PILE

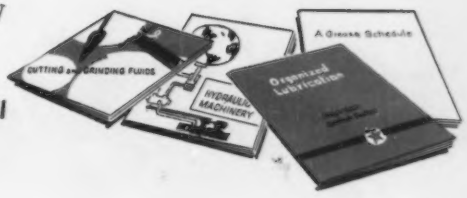
These components of the Texaco "Stop Loss" Program are available to interested mill groups:



**1. New 20-minute sound-color film** "Stop Loss with Organized Lubrication"—created to show the many opportunities for cost control through organized lubrication practices.

**2. A Lubrication Control System** that takes the guesswork out of lubrication scheduling. It costs almost nothing to install, yet can save as much as 15% of your maintenance costs.

**3. A film "package"** for mill departments. This consists of educational films that cover the selection and application of greases, hydraulic oils, cutting oils, etc.




**4. Co-ordinated booklets** on the film subjects plus many others that can be used as guides in specific areas.

***We believe that a modern Texaco "Stop Loss" Program will produce a package of economies in your mill.***

***MAKE YOUR RESERVATION TODAY***
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Please arrange a showing of "Stop Loss" at my mill.

Name_____

Title_____

(Please attach to your letterhead)

Some paper mills are always adding or replacing equipment. Why? And where do they get the money?

In the business history of progressive mills you will find a decisive moment when the manager and his staff convinced the board of directors that capital spending not only anticipates high profits—it creates them.

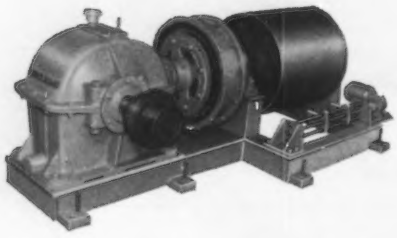
From that point, money is regularly set aside to replace paper and board machine components when their profit contributions become marginal. In effect these progressive mills substitute the concept of "profitable life" for out-moded "useful life."

Money needed to maintain optimum paper machine performance comes from the optimum profits the machines create.

If you would like to talk with people who think of equipment in terms of earning-power—and then build it that way—call in Patton with confidence.

The Patton Manufacturing Company, Inc., Springfield 6, Ohio.

# *where do they get the money?*



PAPER MACHINE DRIVES

**PATTON**

# Trends

**Highlights from Recent APPA Fact Sheet**

Capital expenditures by our industry in the first half of this year ran 25% above same period in 1959—Waste paper consumption this year is running at the same rate as last year although paper and board production are 4% higher—Imports of paper, board, and products for the first four months are up 7% and exports are up 10%.

**Pulp Prices Remain Unchanged**

No changes have been announced in the contract prices on market pulp for the third quarter in this country. However, Scandinavian producers have announced a $5 a ton rise for Europe.

**Price Indexes Show Varied Picture**

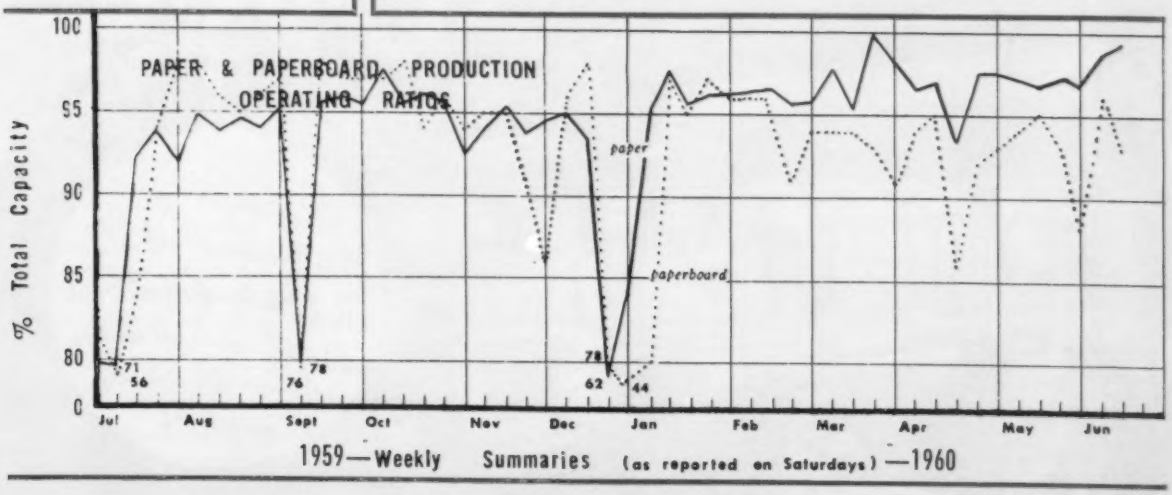
Price indexes (BLS) for April (latest available) show the following point changes from a year ago; Pulp 0, waste paper —14, paper +2, paperboard —0.2 and building paper and board +2.

**Wide Variations in Grade Gains**

First detailed breakdown of production by grades for the first three months is contained in the June issue of the APPA Monthly Statistical Summary. Among the major grades of paper the largest gain, 22.9% took place in the output of on-machine coated paper. Uncoated book was up 9.5%, newsprint +7.7%, wrapping +1.6%, and bag +10.9%, special industrial +11.2% and sanitary tissues (toilet, facial, toweling, etc.) +9.8%. Special food board was the leader in the paperboard field, up 13.8%. Other grades were: set-up —3.4%, container board +6.0%, and folding +2.3%. The picture was varied on construction grades as follows: paper —2.2%, insulating board —1.3% and hardboard +16.8%.

**What About the Year 2000?**

Estimates of U. S. paper and board production in the year 2000 run from 105 to 240 million tons (3 to 7 times present output) in a report prepared by BDSA of the U. S. Dept. of Commerce which will be published in next week's issue.



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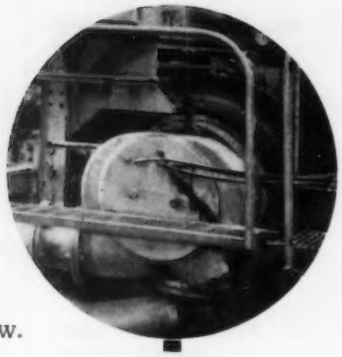
# Suction Breast Roll



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4. Shorter fourdrinier possible. Note short wire length below.

Another "first" from our drawing boards, and further proof of superior engineering that has made Rice Barton a leading paper machinery builder for 123 years. For more information on what these advantages can mean to you write

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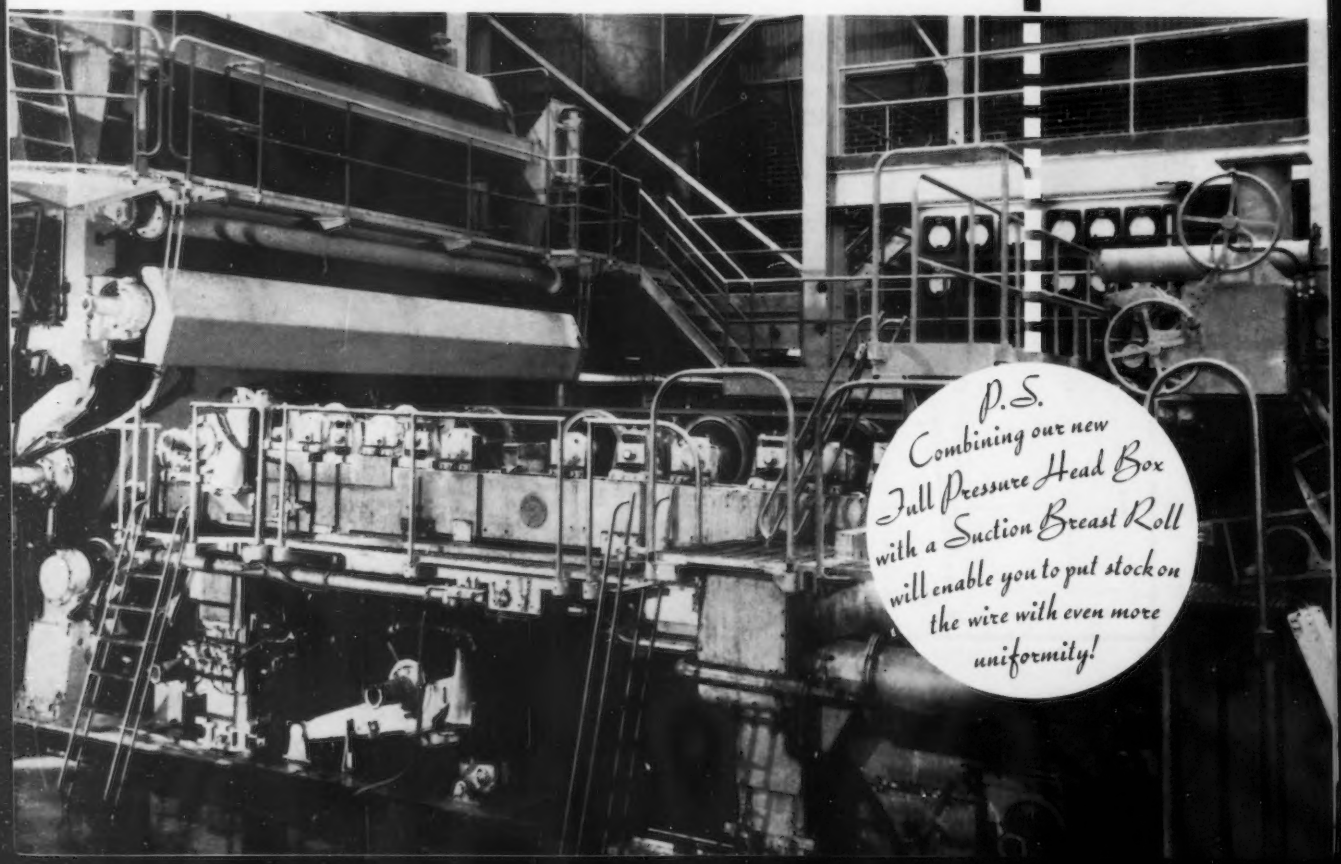

P.S.
Combining our new Full Pressure Head Box with a Suction Breast Roll will enable you to put stock on the wire with even more uniformity!

PAPER TRADE JOURNAL

WEEK OF JULY 4, 1960

## Keyes Fibre Installing New Equipment

Several important improvements in plant equipment, involving its Shawmut and Waterville, Me., plants, have just been announced by Keyes Fibre Co., Waterville, Me.

The new equipment comprises additional molding machines, new methods of stock handling, a new boiler, raw material storage, and enlarged pulpwood grinding and stock preparation facilities at the Shawmut and Waterville mills. Completion date is set for early 1961 with some of the new equipment starting operation this summer.

Keyes is introducing a major change in its manufacturing production with the installation of the new crumb method of dewatering and shipping pulp by rail from its groundwood pulp mill at Shawmut to the company's manufacturing facilities in Waterville. This is of particular interest to those mills in which the expensive and obsolete lapping on old fashioned wet machines has created a heavy cost burden.

With the new crumb method, groundwood will be thickened through a combination of a Dorr-Oliver thickener and P & L disk presses, to 35 per cent A.D., then passed over a Weightometer which automatically weighs the pulp and proportions the additives. It is next conveyed to an E. D. Jones Vertiflex mixer which crumbs the stock, mixes additives as desired, and delivers it to a Sprout-Waldron blower system for carloading. The entire operation is handled by one man through push button controls.

Pulp will be removed by vacuum at the Waterville converting plant and stored in silos. High pressure water nozzles slush the stock from the silos and it is pumped through a consistency regulator to an agitated buffer tank for further defibering. Finally it is automatically sized and passed through a second consistency regulator to the molding machine heavy stock tanks. The new pulp handling systems will be the subject of a detailed feature article in PAPER TRADE JOURNAL as soon as it gets into operation.

The final step in the current program will be the addition of grinding capacity at Shawmut, which will increase the daily production to 120 A.D. tons. Production at the Waterville plant will also be increased this year with the installation of two new machines for Chinet products and one for Savaday products.

## First Central American Paper Mill Begins Operations

The first paper mill in Central America commenced operations this month. Industria Papelera Centroamericana S.A. is jointly owned by Minor Keilhauer, Jaime & Enrique Arimany, both Guatemalan nationals, and Central National Corp., a part of the Gottesman-Central National Organization.

The mill, located on a 200-acre tract near Esquintla, which is 40 miles west of Guatemala City, has a 120-inch fourdriner machine and a 65-inch cylinder board machine.

Mr. Keilhauer, president of the corporation, stated that commercially salable graft paper was manufactured early in June. The plant is capable of producing substantial quantities of the major grades of paper and board used in Central America. It has an immediate annual capacity of 9,000 tons of kraft papers, bonds, tissues, and liner boards; and 6,000 tons of corrugated medium, tag, boxboard, index, and assorted boards, and has been designed and engineered with a view to expansion.

There are approximately 100 employees working under the direction of an American manager, Harvey B. Herman, and several experienced American papermakers are employed to train Guatemalans in the art of papermaking. English and European technicians are training Guatemalans in the operation of the power plant and pulp procedures.

### Thames Board Mills Installing Inverform

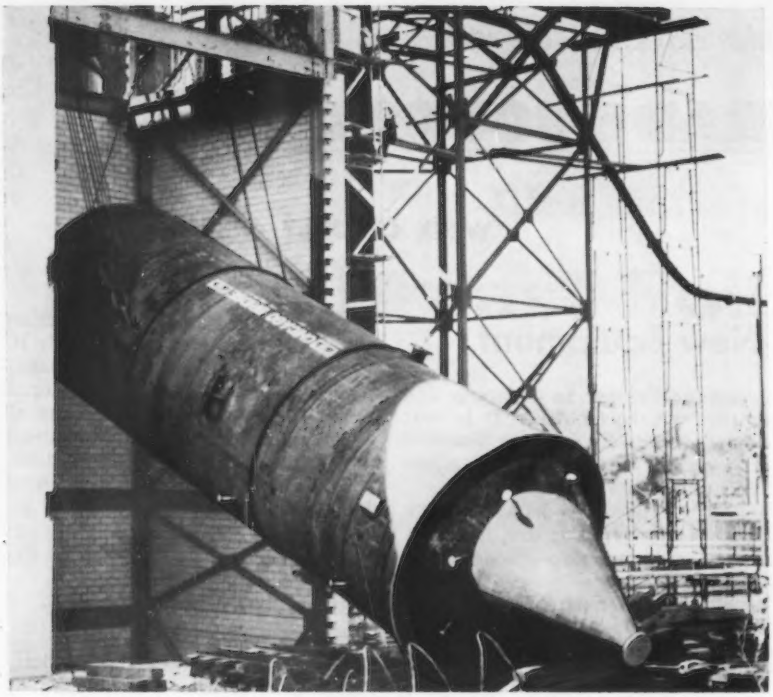
Thames Board Mills is engaged in a major expansion of its Purfleet, England, mill. The company which produces slightly under half Britain's packaging board is installing a new board machine with an initial output of 80,000 tons a year. The new machine is to be supplied by Walmsleys and will be equipped with the new type of wet end known as Inverform. (This new development was described in detail, first time anywhere, in the June 22, 1959, issue of PAPER TRADE JOURNAL following inspection of the first commercial unit by the editor.)

### Paper and Paper Board Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending June 18, 1960, at 99.4 per cent compared with 98.8 per cent revised, for the preceding week. The ratio was 96.7 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the week ending June 18, 1960, at 93 per cent, compared with 96 per cent for the preceding week and 98 per cent for the corresponding week a year ago.

*(Detailed statistics on page 42)*



## New Digester Feature of Finch-Pruyn Expansion

Since the introduction last year of new "Finch" brand paper, Finch, Pruyn and Co., Inc., Glens Falls, N. Y., has outgrown its pulping facilities to such an extent that a second digester and auxiliary equipment became necessary. In line with this need, the installation of a second 60-ton-per-day digester will result in almost doubling the mill's capacity for producing neutral sulphate pulp.

The expansion, involving a new bay on the company's main pulp mill, and the acquisition of much additional auxiliary equipment, has a target date of July 1, 1960, for the start-up of the new digester.

The second digester, of 3,500 cubic feet capacity, matches in size the No. 1 digester which has been in service since 1957. It was manufactured to Finch, Pruyn's specifications by the Chicago Bridge and Iron Co.

A rebuilding program for Finch, Pruyn's No. 2 paper machine is scheduled to start June 26. This project necessitates a complete shutdown of the machine until July 11 when production will be resumed.

The most important change for No. 2 machine is the addition of a size press to make more surface-sized Finch grades.

The entire dryer section and drive on the machine will be rebuilt to compensate for the loss of dryers which formerly occupied the space where the size press will be installed. Additional dryers will be added at the wet end of the machine after the second press.

A new Manchester 32-inch diameter couch roll will replace the existing 26-inch roll, and the wire and couch pits will be resloped and tiled.

### Mead Corp. Forms Foreign Subsidiary

The Mead Corp., for the first time in its 114-year old history, has established a foreign subsidiary, it was announced by H. E. Whitaker, chairman of the board.

Mead S. A. (Societe Anonyme) has been formed as a new, wholly owned subsidiary to centralize the corporation's international operations. Headquarters will be established initially in Zurich, Switzerland. For the present, Mead S. A. will engage in sales and licensing activities and will explore possibilities for manufacturing some of Mead's established products.

Harry R. Slack will coordinate this new Mead enterprise and will take up residence in Zurich soon.

H. R. Slack

Prior to this assignment, Mr. Slack had divided his activities between sales to national magazine accounts and merchant liaison work for Mead Papers, Inc., from the Dayton headquarters office for the past three years.

### Graham Paper Detroit Div. Moves to Larger Location

Graham Paper Co., with general offices in St. Louis, Mo., has recently moved its Detroit offices and warehouse to a new, expanded location at 5794 Federal Avenue, Detroit 9, Mich.

This new location has doubled the warehousing space for Graham's Detroit Division with greatly improved railroad siding and truck dock facilities.

EXECUTIVES of Crown Zellerbach Corp. display the National Assn. of Purchasing Agents top award won for a second consecutive year. Displaying the bronze plaque awarded for the firm's "Packaging Hall of Fame" exhibit are David J. Benjamin, vice president, packaging (right), and James W. Kincaid, manager, Multiwall Bag Sales Division, at the new CZ headquarters building in San Francisco.

## PAPER PEOPLE

F. P. Morrison

F. B. Harlow

# Penobscot Fibre Announces Promotions

Penobscot Fibre Co. has announced the promotions of: Franck P. Morrison to the newly created position of production manager; Frank B. Harlow to the position of manager at the Penobscot mill in Old Town, Me.; and Virgil MacKenzie to the position of purchasing agent.

Mr. Morrison came to PCF in September 1930 after three years as a research chemist for the Eastman Kodak Co. and one year as resident manager of the Wickyup Country Club in East Sullivan.

At PCF he served successively as a research chemist, as night superintendent of the soda mill, as assistant superintendent of the soda mill and as superintendent of the soda mill.

Mr. Harlow has been with the company since November 1930 when he started in the sulphite laboratory. He has served as spare sulphite night foreman, as night superintendent in the soda mill, as assistant sulphite mill superintendent, as sulphite mill superintendent, as assistant manager of mills, and as manager of services.

Mr. MacKenzie came to PCF in November 1925, after working one year for Westinghouse in Philadelphia, Pa.

At PCF, he served in turn as assistant to the chief engineer, as superintendent of the boiler room, and as superintendent of steam and power.

Other promotions announced by Penobscot follow:

Herbert Freedman, who came to PCF in 1955 as a chemist is now research director.

Earland K. Sleight, assistant soda mill superintendent, has been made soda mill superintendent. Mr. Sleight came to PCF in 1948 as a chemist and became assistant soda mill superintendent in June 1955.

Clarence E. Abbott, who joined PCF in 1946 as assistant steam superintendent, has been promoted to steam superintendent.

Robert Emerson is now superintendent of pulp control. Mr. Emerson, who joined the company in 1948 as a chemist, worked for a few months as night superintendent of the sulphite mill.

H. Brian Mooers was promoted from assistant power superintendent to power superintendent. He came to PCF in 1957 from the International Paper Co. in Latuque, Quebec, where he had been employed for five years.

Virgil MacKenzie

Laurence Leavitt has been advanced from chemist to assistant superintendent of pulp control. He joined PCF in 1955 after eight years with Spencer-Kellogg & Sons.

John C. Cousins, who has served as technical director since 1959, has become assistant production manager. He came to PCF in 1937 as assistant chemist.

Front row, l.to r., are: E. A. Sleight, Herbert Freedman, H. B. Mooers, and J. C. Cousins. Back row: C. E. Abbott, Robert Emerson, and Lawrence Leavitt.

## PPMA Adds Two To Executive Committee

P. H. Glatfelter, III, chairman of the Printing Paper Manufacturers Assn., has announced the addition of two new members to the Executive Committee to fill existing vacancies. Benjamin V. Wright, vice president of the Champion Paper and Fibre Co., has been elected to fill the unexpired term of Herbert W. Suter, Jr. (deceased). Logan Miller, Fraser Paper, Ltd., New York City, has been elected to fill the unexpired term of John Cryan who has resigned.

J. F. Helmer

R. C. Schultz

# KVP Announces Laboratory Appointments

James F. Helmer has been appointed as a process engineer with the technical department of the KVP Sutherland Paper Co., KVP Division. Mr Helmer graduated in June from the State College of Forestry, Syracuse University, with a B.S. degree and a major in pulp and paper.

Richard C. Schultz has joined the quality control section of the technical department of KVP. Mr. Schultz graduated in June from Kalamazoo College, Kalamazoo, Mich., with a B. A. degree.

A. H. Martin

## Thilmany Names Paper Mill Superintendent

A. Harold Martin was recently named superintendent of the paper mill of Thilmany Pulp & Paper Co., Kaukauna, Wis. He succeeds F. X. Kreiling, who resigned to accept a position with Georgia Pacific Co.

Mr. Martin joined Thilmany in 1957 as manager of a division including paper machines 6, 7, 8 and 10. He had previously been with Marionette Paper Co. as technical control director, and had held a variety of positions with Scott Paper. He is a graduate of the University of Wisconsin, with a master's degree in chemical engineering.

R. C. Dressler, who had been in charge of stock preparation at the paper mill, was named to Mr. Martin's former position. Frank Ferrige continues as manager of the division which includes machines 9, 11 and 12.

## Duval Elected V-P Of Hammermill Co.

Albert F. Duval, who resigned as president of United States Envelope Co. June 11, has been elected vice-president of Hammermill Paper Co., Erie, Pa.

## Westvaco Chemist Gets Achievement Award

The first annual "Enslow-Hedgeteth Memorial Award" for outstanding achievement in industrial stream pollution abatement was awarded to Robert L. Laws. Presentation was made at the annual meeting of the Virginia Industrial Wastes and Sewage Works Assn.

Mr. Laws is supervisor of waste treatment and pollution abatement at West Virginia Pdlp and Paper Co.'s plant in Covington. The association, in making the award, cited Mr. Laws' achievements:

1. Greatly reducing pollution of the Jackson River from 160,000 to 65,000 population equivalents per day;

2. Biological life moved from 45 miles downstream from the Covington paper mill to 5 miles;

3. Pioneered the use of surface aeration in paper mill waste treatment;

4. Applied polargraphic techniques to activated sludge treatment of pulp and paper mill wastes;

5. Has actively engaged in four chemical methods for color removal from waste streams. He is now engaged in a biological method of color removal from streams;

6. Development work in creating cultures to reduce pollution under high temperature conditions;

7. Promoted free exchange of technical data with other industrial plants, societies and municipalities on an international basis.

## Keith to Superintend Lincoln Pulp Mill

Edward W. Keith has been appointed superintendent of the Lincoln pulp mill of Eastern Fine Paper and Pulp Division, Standard Packaging Corp. He succeeds T. J. Carlin, who has joined a Canadian firm.

Prior to accepting the Eastern post Mr. Keith had 40 years of experience at Penobscot Chemical Fibre Co., Great Works. During this time he worked up through various superintendencies. On June 1, 1955, he was named vice president and manager of mills for Penobscot.

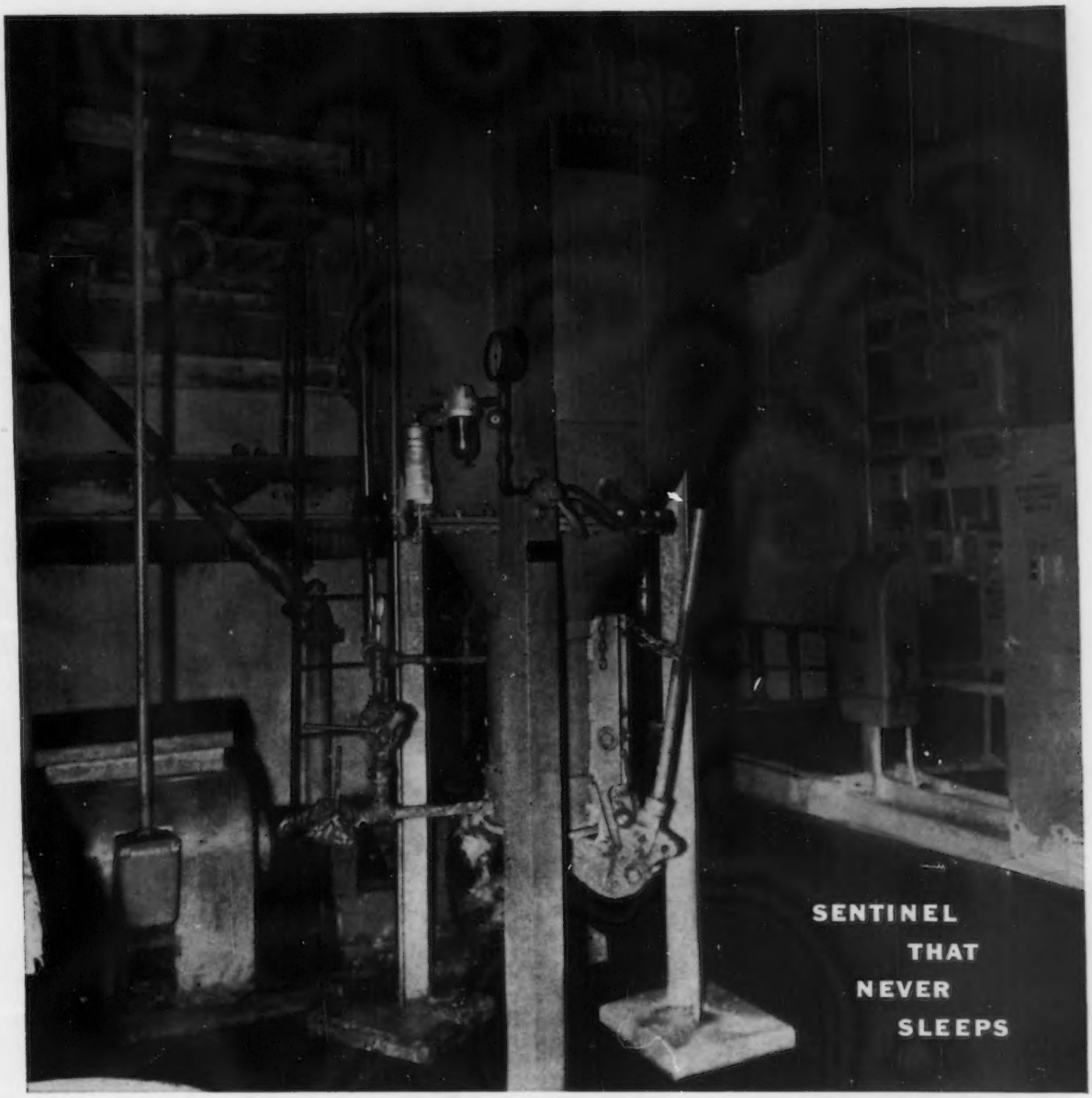
E. L. Wellner

## Wellner Named to New Post At Neekoosa's Potsdam Mill

Earl L. Wellner, a veteran paper maker in the Port Edwards mill for 34 years, has been named assistant to the paper mill superintendent of the Potsdam, N.Y., mill of Nekoosa-Edwards Paper Co.

## Erickson Joins Simmons In Executive Post

E. W. Erickson has joined H. A. Simons (International), Ltd., consulting engineers, in a executive capacity after spending over 40 years with Crown Zellerbach Corp. His career began at Ocean Falls, B. C., from which he later transferred to the Camas and Port Angeles plants. He was resident manager at Port Townsend for about 15 years; then was given leave of absence from C. Z.




## — DOES DOUBLE DUTY

**1. It protects quality** — standing guard at the head of the line, just as the stock comes from the pulpers, the Bird Centriffler takes out the big hunks of dirt before they can get broken up into fine particles that are difficult and costly to remove, or that cause rejects.

**2. It protects equipment** — junk, dirt and grit are trapped before they can do damage to expensive and delicate machinery and wires. The dirt is removed by quick operating hand lever (shown) or by automatic dumping mechanism.

## THE BIRD CENTRIFFLER

**BIRD MACHINE COMPANY**

**SOUTH WALPOLE, MASS.**

REGIONAL OFFICES: EVANSTON, ILLINOIS
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Canadian Manufacturers of Bird Machinery
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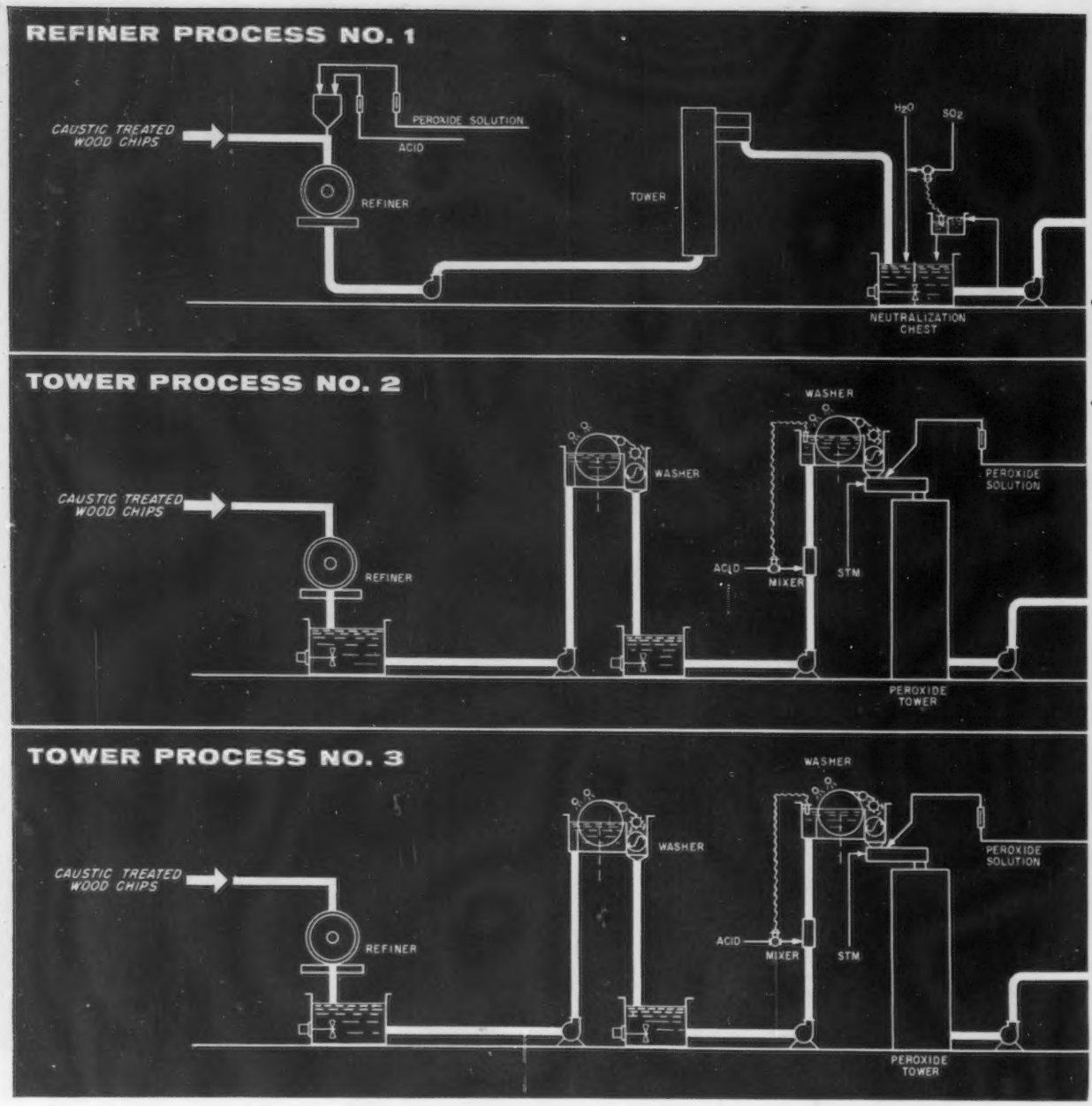


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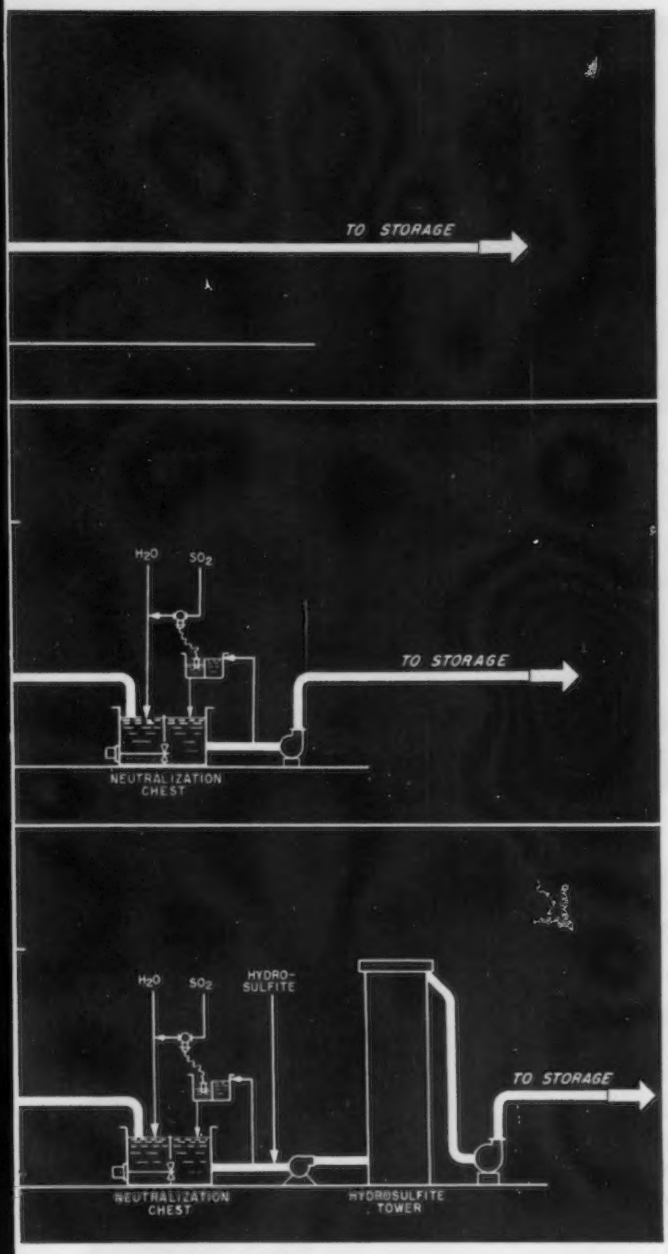
experience can help you make the right

...and save you thousands of dollars in

**CALL ONE OF THESE MEN... LET HIM WORK WITH YOU IN MAKING THIS IMPORTANT DECISION:**




Du Pont experience has helped many mills make the right choice between tower or refiner bleaching for cold caustic pulp based on brightness requirements. For example:

**60 brightness.** In process No. 1 at left, caustic-treated wood chips enter refiner and are bleached with "Albone" hydrogen peroxide and acid*. The use of acid controls the alkalinity of the bleaching reaction and assures maximum response from the hydrogen peroxide. Sulfur dioxide ($SO_2$) then neutralizes the bleached pulp and stabilizes the brightness obtained in the refiner. **Du Pont Patent Pending.*

**65 to 75 brightness.** In process No. 2 at left, pulp is refined, washed to remove caustic solubles, acidified with sulfuric acid to remove acid solubles, washed, and bleached in a conventional peroxide tower to desired brightness in the 65 to 75 range.

**70 to 80 brightness.** In process No. 3 at left, pulp goes through the same steps as in process No. 2. Then pulp is neutralized, and bleaching is completed in a hydrosulfite tower for maximum brightness in the 70 to 80 range.

*Electrochemicals Department, Peroxygen Products Division*
*Wilmington 98, Delaware*

**ALBONE®** hydrogen peroxide — **DU PONT** REG. U.S. PAT. OFF. — **SOLOZONE®** sodium peroxide

BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

# **bleaching cold caustic pulp?** Du Pont choice between tower or refiner bleaching investment and chemical costs.

**Midwest Area**
W. L. Liike, Chicago, Ill.—INdependence 3-7250

**West Coast Area**
P. E. Kiefer, Portland, Oregon—CApital 7-1281

**New York & Boston Area**
C. R. Lombard, New York, N. Y.—LOngacre 3-6440

**Southern Area**
R. W. Hammond, Charlotte, N. C.—FRanklin 5-5561

Or call: N. J. Stalter, Wilmington, Delaware—PRospect 4-4698

The DRAPER Felt
DRAPER BROTHERS COMPANY
CANTON, MASS.

for about three years during the planning and construction period of the San Joaquin mill for Fibreboard Paper Products, Inc.

Mr. Erickson returned to the San Francisco office of C. Z. in 1950 in an executive capacity and at the time of his retirement April 1, 1960, was vice - president in charge of manufacturing, engineering and construction.

## Pulp and Paper Specialist Joins Rust Engineering

Richard S. Bean has joined the Birmingham office of The Rust Engineering Co., Pittsburgh, Pa., as staff engineer, pulp and paper mills. Previously, Mr. Bean served 15 years with Hollingsworth and Whitney Division, Scott Paper Co., in Mobile, Ala., as plant engineer with additional duties as expansion engineer for the past five years.

R. S. Bean

Prior to World War II, he served as maintenance and process engineer at the Pasadena, Tex., plant of Champion Paper & Fibre Co.

**Jack Sweers,** right, who will manage the new P. H. Glatfelter Co. Data Processing Department, and Thomas Norris discuss the detailed responsibilities of the department. Mr. Norris, who won a Glatfelter scholarship in 1950, recently graduated from Gettysburg College majoring in business administration. Mr. Sweers will be responsible for the projects to be placed on new IBM equipment to be installed September 1. Mr. Norris will be a programmer in the department.

## Slater and Long Advance At River Raisin

Two manufacturing division promotions at the River Raisin Paper Co. Division of Union Bag-Camp Paper Corp. were announced by Fred Attwood, vice-president for manufacturing.

Robert Slater, who has been with the company since February 1954 when he started as a time-study engineer, becomes chief industrial engineer. He will be responsible for standards installation and administration in all plants and will be in charge of methods improvement, reporting directly to Mr. Attwood.

D. Long, who started as a chemist in November 1951 after graduation from Miami University at Oxford, Ohio, has been appointed technical director, a newly created position.

**Keep your eye on our Classified Advertising Section**

## Hurlbut Names West Coast Representative

Lester L. R. Phillips, assistant sales manager, Hurlbut Paper Co., South Lee, Mass., has been named the firm's West Coast representative. He will have headquarters in the Mead Packaging plant at 2726 Fruitland Avenue, Los Angeles.

**W. H. Birchard** of the technical department, Fraser Companies, Ltd., being presented with an engraved gold watch in recognition of his 25 years of service with the company by W. A. Ketchen (right) vice president-technical services. A graduate of Queen's University, Mr. Birchard has held important positions with Fraser and is presently concerned with special problems pertaining to the promotion of paperboard produced by the company.

POWELL

CORROSION RESISTANT

VALVES

## performance that makes a world of difference

The Powell Special Design and Alloy Valve Division was created to study and solve the flow control problems arising from the increasing number of corrosive fluids used in the Chemical and Process industries.

As a result, Powell has developed valves that can be depended upon for long, uninterrupted service under the most corrosive conditions; valves that require little maintenance; and that eliminate the possibility of contamination of end product.

Powell offers valves to handle practically every corrosive fluid—valves of every design and in the largest selection of metals and alloys. Contact your local Powell distributor. Or write or call us direct. Our consulting engineers are at your service.

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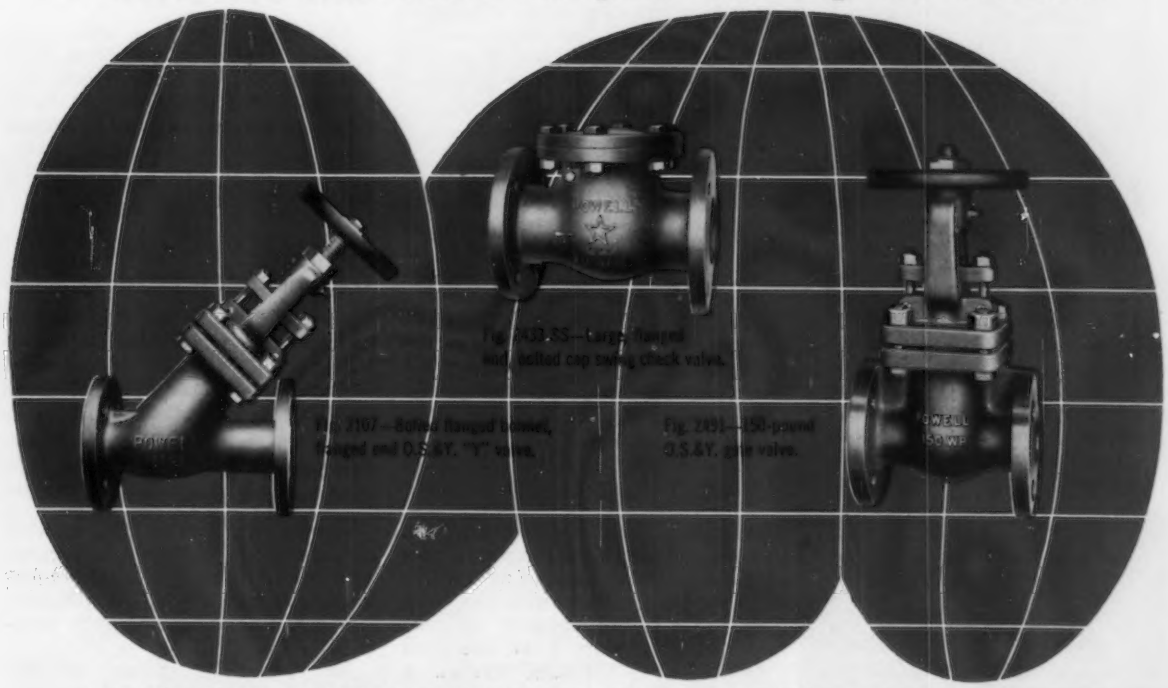


THE WM. POWELL COMPANY • DEPENDABLE VALVES SINCE 1846 • CINCINNATI 22, OHIO

**LEAKING SHUT-OFF DAMPERS A PROBLEM IN YOUR PLANT?**

Well, they needn't be any longer!

The new SF Shut-Off Damper for dust laden gases has been engineered to meet the most exacting requirements for a LEAK-PROOF damper device.

It has been tested over long periods under the most unfavorable operating conditions, with hot, moist flue gases containing fine dust particles — factors which often lead to the formation of deposits. And even under these conditions, the operating and sealing characteristics of the SF Damper have proved themselves superior! Therefore, in installations where you depend on leak proof shut-off dampers to minimize costly shut down time, you can now cut down on your maintenance costs. And, better still, you will be back in full production much sooner!

With the existing design of the SF Shut-Off Damper, it can be readily installed in various systems of flue gas ducts. It is available in 12 standard sizes, capable of handling gas or air quantities ranging from 6,000 to 250,000 cubic feet per minute. It may be manually operated or supplied with an automatic device for remote control.

AMERICAN SF PRODUCTS, INC.
420 Lexington Avenue, New York, N. Y.
SF Products Canada Ltd.,
940 Cote de Liesse Road, Montreal


# PJT NEWS OF CONVERTERS

## Sonoco to Open New Plant in September

Officials of the Sonoco Paper Products Co. of Hartsville, S. C., have announced the leasing of a building in Ravena, to house a new plant to open in September. The firm will take paper manufactured at the Munroe Falls (Summit County, Ohio) plant and make it into tubing —the firm's end product.

First production in the Munroe Falls plant was started June 16 and the plant will produce about 40 tons of paper a day. The Ravena plant, which will manufacture tubes ranging from pencil size to three feet in diameter, will produce from 50,000 to 75,000 pounds of end products a month.

## Hudson Pulp & Paper Advances Braithwaite

Production at the "Multiwall" bag plant of the Hudson Pulp and Paper Corp., Wellsburg, W. Va., will be under the direction of Richard Braithwaite. He will also be manager of the company's Multiwall operations in Florida and Arkansas. His promotion has just been announced by Bruce W. Martin, vice president, manufacturing.

## I-P's Container Div. Names Sales Managers

Appointments of assistant sales managers for three plants of International Paper Co.'s Container Division have been announced.

William J. Hindle and Gilbert G. Fryer were named to the position at the Whippany, N. J., plant. Richardson W. Knowland will hold the post at Manchester, N. H., and Clifford E. Pace at Geneva, N. Y.

Mr. Hindle, who joined I-P's sales training program in 1956, formerly was a member of the division's sales force. Mr. Fryer also is a graduate of the company's sales training program, which he entered in 1957.

Thomas E. Bliss, who has been assistant sales manager at the Geneva plant since 1958, has been transferred to the same position at Philadelphia, Pa.

Mr. Knowland has been with I-P since 1953. He previously served the Container Division as a salesman beginning in 1955.

Mr. Pace first joined I-P in 1941 as a sales trainee and has served on the sales staff of the division.

## Hoerner Boxes to Build Fourteenth Plant

R. N. Hoerner, president and chairman of the board of Hoerner Boxes, Inc., Keokuk, Iowa, has announced the purchase of a 152-acre tract of land in Gurnee, Ill.

Hoerner Boxes, Inc., will build a modern 180,000 sq. ft. plant for the manufacture of corrugated boxes in Gurnee. The total investment will amount to between 2½ and 3 million dollars.

Stanley Engineering Co. of Muscatine, Iowa, and Chicago, Ill., is handling the construction, and expects the plant to be ready for operation in the spring of 1961.

## J. C. Wilson Purchases Victoria Box & Paper

Victoria Box & Paper, Ltd., established 50 years ago at Victoria, B.C., has been sold to J. C. Wilson Co., Lachute, Que., a subsidary of Price Bros. Quebec, according to announcement by Louis Glazin, former owner-manager. J. D. Horne succeeds Mr. Glazin as manager.

## Maryland Paper Box Occupies New Building

Maryland Paper Box Co., Leadenhall and Ostend Streets, Baltimore, Md., recently occupied a one-story 36,000-square foot building at Halethorpe, Baltimore County, Md.

## Parker in New Post At Stone Container

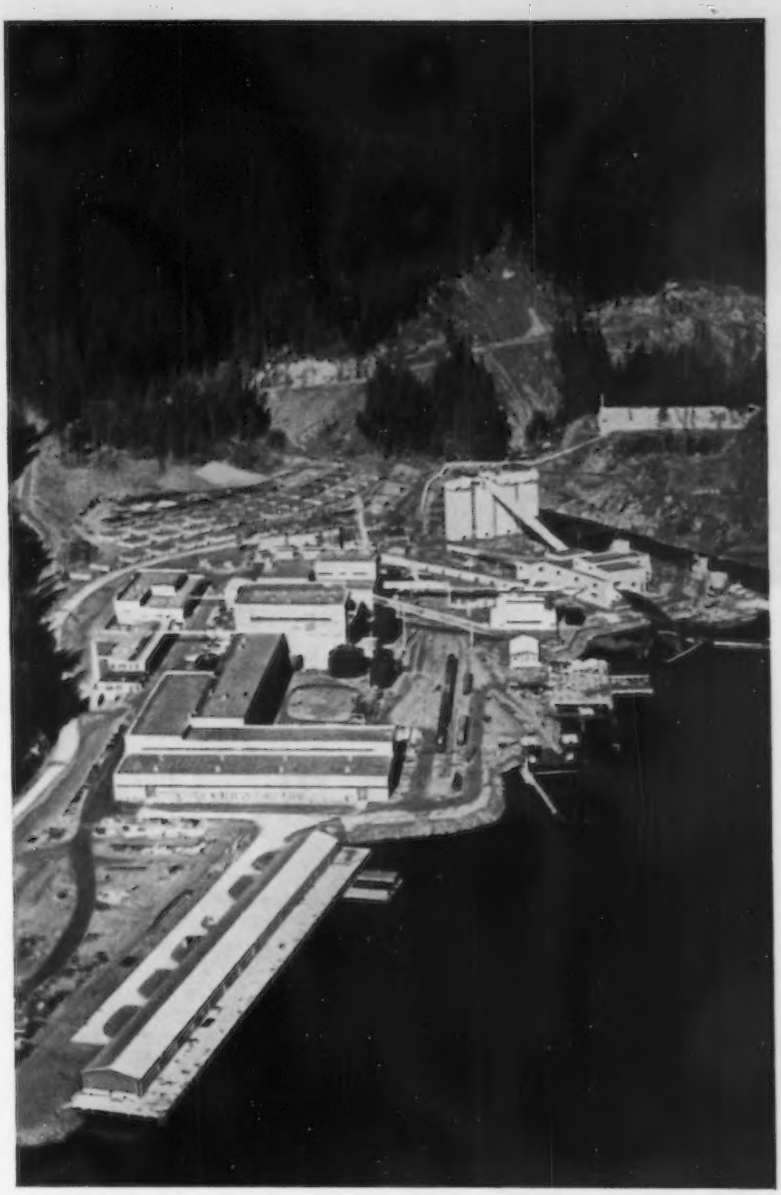
Hervey E. Parker, III, general manager of the Mansfield corrugated box division of Stone Container Corp., has been elected an assistant vice president of the parent corporation.

Mr. Parker will continue with his present duties at the Mansfield plant.

340 TONS PER DAY

# ...MgO Plant On Line At Alaska Lumber & Pulp, Sitka

**With the start of the 340 ton per day Alaska Lumber & Pulp Company plant, over 650,000 tons of pulp per year are being produced by the MgO Process.**



This is the second* magnesia bi-sulfite dissolving pulp mill in Alaska, and the largest industrial improvement since statehood. Utilizing the commercially-proved, closed cycle MgO Recovery Process, Sitka's predicted chemical usage is 20 lb of MgO and 50 lb of sulfur per ton of unbleached pulp.

Two B&W recovery boilers, each designed to process 550,000 lb of waste sulfite liquor solids per day, generate a combined total of 228,000 lb of steam per hour. Two B&W power boilers provide supplemental steam for power and process to 320,000 lb per hour burning bark or oil singly or in combination.

The MgO Process provides economical recovery of chemicals and heat from the waste sulfite liquors. In addition, air pollution and process odors are reduced to an absolute minimum. The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

***Sitka** *is the fifth MgO plant built in recent years in the continental U. S. Others are Weyerhaeuser Timber Company, Longview, Washington; Ketchikan Pulp Company, Ketchikan, Alaska; Weyerhaeuser Timber Company, Cosmopolis, Washington; Brown Company, Berlin, New Hampshire. A sixth plant is on order for Hylte Bruks in Sweden.*

F-826

B&W

THE BABCOCK & WILCOX COMPANY

BOILER DIVISION

◀ Aerial view of mill —Note piles of bales of straw and cornstalks in foreground.

# American-Israeli Mill Expansion Includes Bleached Cornstalk Pulp

Major features of a recent program at the only pulp and paper mill in the Holy Land are a new paper machine and a pulping system for various agricultural residues.

Two years of research and engineering enabled Israel's sole pulp and paper mill to devise a comprehensive system of harvesting, transportation and storage that overcomes the high cost factors and allows the economical use of agricultural wastes—cornstalks and straw—as raw materials for the production of about 40,000 metric tons of paper a year. Production of pulp, for the first time in this part of the world, began this spring when the American-Israeli Paper Mills of Hadera (located half-way between Tel Aviv and Haifa) put into operation its $12 million expansion program including a Pandia pulping system, Beloit paper machine, a power station and Kamyr washing and bleaching plant.

## Cornstalk Handling

Corn is harvested here in September and October when stalks have reached a height of 8 to 10 feet. Most of the harvesting is done with mechanical equipment which picks off the ears of corn and leaves the stalks in the field either attached to the root, broken and lodged, or cut at a height of 8 to 10 inches from the ground. Collecting of the disorderly mass of cornstalks involves cutting and baling.

Cutting is done with a four-row flail-type forage chopper, which has a capacity of 12,000 to 14,000 lbs. per hour and is powered by a 45 h.p. diesel wheel tractor. This machine is drawn over the corn, chopping the stalks into pieces six inches in length. The chopped material is blown into a windrow and left on the field to dry for 24 hours.

At the beginning of the harvest season the moisture content of stalks is 50 per cent, dropping to 20 per cent as the season progresses. After

High density baler picks up cornstalks ▶ from windrows and bales them.

24 hours of drying in the windrow, the chopped material has a moisture content of only 8 to 10 per cent. To prevent mold and rotting, the baled cornstalk must have a moisture content below 12 per cent when stored.

The forage chopper used in the process was built by the Yifat Iron Works, Israel, in accordance with American-Israel Paper Mills specifications. The latter called for joining two standard choppers to cut a swath 12 feet 6 inches wide. As the rows of corn are spaced 40 inches apart, the machine can thus chop four rows at a time. The units are so joined as to alloy each one individually to rise or descend as may be indicated by the contour of the field. The chopper chutes are directed so that the chopped material from all four rows is blown into one windrow.

A self-propelled baler picks the chopped cornstalks from the windrows and compresses them into bales, which are then dropped in rows behind the machine. The baler requires one operator and has an average capacity of 6 tons per hour for bales weighing 110 pounds. The agricultural baler which proves to be most suitable for cornstalk is made by J. A. Freeman Co., Portland, Oregon. It is Freeman's newest self-propelled, automatic wire tie baler, producing a high-density bale averaging 14″ x 16″ x 50″ with an average weight of 110 lbs.

## Straw Harvesting

The company found that it was possible to utilize the same equipment for straw. Here too the cost was reduced by producing high-density bales. Since the harvest areas are not in the vicinity of the mills, the production of high-density bales brings about drastic savings in transportation costs. Bales weigh 100 lbs. and are approximately 50 per cent denser than those made by conventional methods.

## Removal of Bales From Field

Handling the bales manually proved too slow and too costly. In addition, the heavy weight of the high density bale created new problems in loading. To overcome this difficulty, a bale loader was imported from the U.S., designed for handling high-density bales. It is fully automatic and drawn by a 30 h.p. tractor. The operator directs the loader by means of hydraulic controls. The loader picks the bales, puts them on the bed of the wagon and when fully loaded is drawn to the end of the field. At this point the bed of the wagon is raised to a vertical position and the bales placed in a stack. The operation requires only one man and can handle 20 tons of bales per hour. The bales can be loaded on trucks from these stacks with conventional bale elevators.

## Unloading and Stacking for Storage

Fifty thousand tons of raw material will be required per annum, including about 15,000 tons of baled straw and 35,000 tons of baled cornstalks. The straw will be delivered during May/August at a rate of 150 tons per day. The cornstalks will be delivered during September, October, and November at the rate of 635 tons per day.

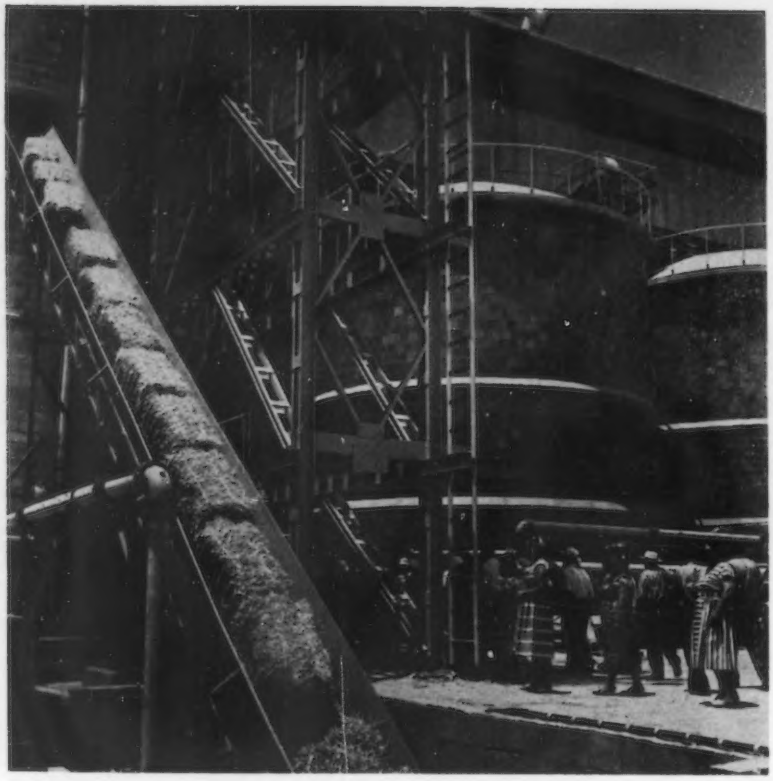
Piles of baled cornstalks are protected from the rain with a layer of straw bales. ►

▼ Ricks are built over a system of flumes which lead to the pulp mill.

To facilitate the handling of such a large quantity of raw material, a crane with a specially constructed "ice-tong" grab has been designed. It can unload the trucks and place the bales in the ricks at the rate of 20 tons per hour. With this type of unloading, ten laborers are required to build the rick. During the peak period of September-November, two cranes will be required to work 16 hours per day.

## Storage of Bales

An open storage area, in the vicinity of the mill, has been devised by the company. The bales are stored in ricks 200 feet long, 50 feet wide, 22 feet high, with an inverted V top.



Pick-up conveyor removes bales from flume at digester house.

Cornstalk ricks require covering to prevent rot and mold. The following covering material were field-tested: Polyethylene, Nylon ribbed ethylene, canvas, polyethylene with a corrugated medium paper cushion, corrugated sheet metal, and bales of straw.

Bales of straw were found to be the least expensive and most practical method of covering for the cornstalk bales. The final layer of bales on the V shaped top of the rick is therefore of straw. In order to obviate penetration of moisture through the top layer of bales, a layer of waterproof paper is placed between this layer and the rick. It is estimated that one third of the straw in the upper layer of bales may be rendered unsuitable for pulp-making. The bales of material are removed from the ricks by means of chutes.

## Flumes Used

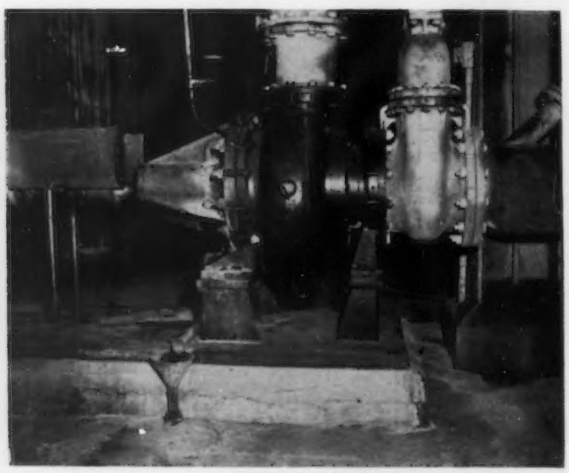
Adjacent to the storage areas of the mill, a system of flumes carry the bales from the storage ricks to a conveyor, which will lift them to the mill. At the request of the American-Israeli Paper Mills, the Israel Institute of Technology carried out a series of experiments to determine the size of flume and quantities of water required. The results of these tests show that a minimum water discharge of 170 cubic feet per minute is necessary in order to convey the required amounts of material. This water will be primarily pulp mill effluent.

The Israel Institute of Technology recommended a rectangular channel 75 centimetres wide and 80 centimetres high. The channel bottom should have a smooth concrete finish. A flow depth of 16 centimetres with a 290M³/hr. discharge should be provided to assure a bale flow of 10 tons per hour.

## Pulp Mill Operation

Pulping is based on a mild soda cook, uses a continuous Pandia digester system and has a potential capacity of 100 tons of bleached pulp per day. In the beginning, production rate will be 60 tons of pulp; later on, capacity can be raised to 100 tons a day with only a relatively small capital investment. The bleach plant has an initial capacity of 100 tons a day. While the cooking, washing and bleaching departments of the pulp mill are of the conventional

Handling bales of purchased pulp in roofed storage area.



Typical of the many Allis-Chalmers stock pumps in the mill.

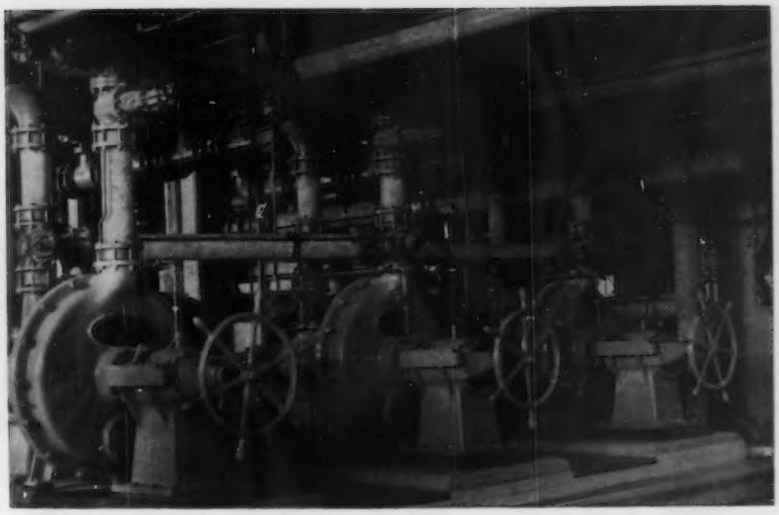
type, transportation and pre-treatment of the straw and cornstalks are rather new and different.

The ricks of straw and cornstalks are built over the system of flumes through which the bales are floated to the pulp mill. All the flumes, which can be selectively closed down, converge on a central flume ending at the locally constructed pick-up conveyor. The water in the flume is effluent water, circulated by a 2500 g.p.m. pump. The dirt in the water is screened out by a traveling dirt screen.

Due to specific local conditions, the pulp mill will have to handle a variety of agricultural residues. This imposes a need for flexibility and compromise rarely encountered in other mills which normally have a uniform supply of raw materials. The complicating factor is mainly the cornstalks, which must be depithed before cooking.

Each of the bales, weighing about 100 lbs., are freed from their wires and go into three bale breakers, specially designed by Bauer Brothers. The material passing through magnetic traps, is fed into three 150 h.p. Bauer single disk 36-inch refiners. The purpose of these refiners is to break the cornstalks and free the pith. In the case of straw, the disk refiner action is relatively gentle and serves to break up the nodes.

After leaving the refiners, the material falls on three 72-inch single shaker screens. In the case of straw, the shakers shake out the dust and debris, but in the case of cornstalks a grading of the raw material is achieved. The screened portion consists of long fibers, while the material falling through the slats consists of pith and small fiber. This fraction is further processed for recovery of the short fibers. The fractionation method was worked out at the laboratories of Bauer Brothers. The reclaimed fiber fraction is added to the bulk of the material and cooked, while the pith fraction is thickened, pressed and used as chicken litter or fuel. The raw material then is washed in a washing silo and pumped on to the Pandia conveyor, which doubles as a drainage conveyor.



Three of the seven Claflins which provide primary and secondary refining.

## Cooking

The Pandia is a four tube unit (each tube of 36 inch diameter and with provision for two additional tubes) continuous digester with blow tank and conventional instrumentation panel. The brown stock is passed through a 36-2 Sprout-Waldron single rotating disk refiner. The washed brown stock is screened through three primary Cowan screens and one tailing screen. The final cleaning is done by four 623 Bauer primary Centricleaners and one 622 secondary cleaner. The pulp can either go to a three per cent stock chest or to two high density (14 per cent) chest each with a capacity of 150 tons pulp.

## Bleaching

The bleaching is done in a conventional three-stage bleaching system, designed by Kamyr. There is one chlorine tower, one caustic tower and two hypo towers with intermediate washers. All towers and chests are lined with acid resistant tiles and the metal parts are of Type 304 stainless steel. The bleached pulp can be sent directly to the paper machines or to a high density chest.

The instrumentation, supplied by Foxboro, is of the most advanced type. The consistency regulators are De Zurick paddle type regulators. The stock flow meters are of the magnetic type. The rotameters are by Brooks.

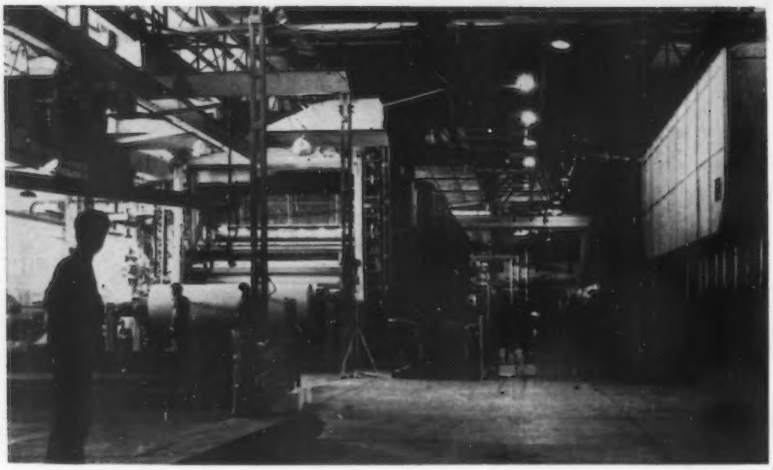
Kamyr washers in the conventional three stage bleach plant.

## Pulp Yard and Stock Preparation

As the pulp mill supplies only 50 per cent of pulp requirements, the rest consists of various dry pulps purchased abroad.

The bales of dry pulp are kept under a roof and are transported to stock preparation by a Cleveland crane system using screws for picking up three bales at a time. This crane is used at the same time for stacking the bales as they are unloaded from trucks. The whole opera-

Composite view of machine room shows No. 1 machine (left) and the new one at the right.



Dry end of the new number two combination machine.

tion is controlled by one man sitting in a cabin above the screws.

Stock preparation equipment consists of: three slushing units (one Hydrapulper and two Morden Slushmakers); seven Morden Stockmakers and seven Claflin refiners as primary and secondary refiners.

The stock preparation system is designed for maximum versatility and flexibility; the complete department is controlled by a central instrumentation panel, which blends and routes the stock to the paper mill. Each paper machine has three stock chests and a machine chest—which allows for versatile blending. The addition of all chemicals is centrally controlled by the stock preparation operator at the stock preparation instrumentation panel. Further quality and operational control is ensured through the wide use of consistency regulators and magnetic flowmeters.

Each machine has a machine jordan (controlled by the machine tender). This machine was originally built by Bertrams & Co., Edinburgh, and operated up to the end of 1959 at which time the machine was shut down for about 60 days for an extensive rebuild program. The rebuild included the installation of:

Beloit pressure headbox;

13 additional 75 lb. 5 ft. dryers;

A new smoothing press;

Replacement of the vertical size press with horizontal press;

New condensate system and new air removal system;

High speed Cameron rewinder;

Rebuilding the drive.

The wire of this machine is 136 inches wide and 80 feet long. The machine operates at speeds up to and including 1200 feet a minute and has a drying capacity of about 120 tons per day. Screening and cleaning section includes:

Three Jonssen screens:

Seven primary Bauer Centricleaners;

Two secondary Dirtec cleaners.

## No. 2 Paper Machine

This new Beloit machine is a combination machine with 22, five feet predryers and a 12 foot Yankee dryer. This machine produced MF, MG, and crepe papers. The range of weights on this machine are from 12 lbs. (24 x 36/500) to 30 lbs. (24 x 36/500). The grades primarily produced on this machine include MF and MG sulphite and kraft wrapping papers, lightweight bond and airmail papers, manifold, fruit wrap, tissue towelling and toilet paper. This machine operates at speeds up to 1500 feet per minute. The wire is 136 inches wide and 95 feet long.

The screening is done by one Bird screen, one Jones screen, five Bauer Centricleaners and two secondary Dirtec cleaners. This machine has a Cameron type 460 re-winder, which operates at speeds up to 5000 feet a minute.

Both machines have centralized systems for headbox additives; in addition to which No. 1 machine has a centralized control for size press and calendar stack additives.

The converting department includes: two sheeters, two Cameron rewinders, one 10 roll supercalender; tissue napkin and industrial towel converting equipment.

## Power Plant

Steam is supplied by two Combustion Engineering boilers having a combined capacity of 2500 lbs. per hour at a maximum pressure of 650 p.s.i.g. The power plant has an extensive water treatment plant. Electrical power is supplied by a Brown-Boveri extraction turbine with a maximum capacity of 12,500 KWA. As a standby, the company is also connected with the general power grid of the Palestine Electric Corp.

Forty-six Allis-Chalmers pumps figure prominently in the program. They range in size from 4 by 3-in. units, rated 150 g.p.m. under 75 ft. of head, to 18 to 16-in. pumps rated 7500/1500 g.p.m. under 35 ft. of head.

A Reader Raises . . .

# Some Questions on Finished Paper Warehouse Requirements

DEAR SIR:

Referring to your series of articles "Something can be done about the Finisning Department," I would like to congratulate you on publishing them, since the finishing end is indeed the step-child of the paper industry.

I would like to refer in particular to No. 5, Finished Paper Warehouse Requirements, where no mention appears to have been made of the consideration of capital tied up in the finished product stored in the mill. The reduction of costs for large runs has been mentioned in your first article, but surely against this must be put the capital tied up in large amounts of paper stored. Only when the two are compared can the optimum lot size be obtained.

Another interesting point is the delay of shipment of orders for some reason or other. Rather than keeping paper for firm orders in the stockroom, would it not be more economical to remove this to a special area awaiting shipment instructions so as to facilitate stock-keeping and stock administration, and to avoid misleading by too large a stock.

Thirdly, we would comment on your expert's idea of laying out a stock room four pallets deep, and would be interested to know how he can work on the "first in—first out" principle under these conditions. The danger of paper in the deepest pallet staying in storage for too long, and ultimately deteriorating must surely be great.

Finally, your expert mentioned that slow moving lines are also palletised. Would he agree that racking is essential under these conditions, with pallets starting at the top and being moved down by lift truck to floor level as the lowest pallet empties, in order to ensure rotation of paper and ease of handling.

G. L. Wallace
Production Department

Wiggins Teape & Co., Ltd.
London, England

## Our Expert Answers

The very welcome comments on the article on Finished Paper Warehouse Requirements (issue of May 9, 1960) warrant a reply. It was the main purpose of the series to describe one way of doing something about the finishing department so that other methods would be suggested and thus solve some of the problems. I take this opportunity to emphasize the value of reader contributions to a possible column such as "Advice to the Lovelorn" except that in this case, it would be entitled "Advice to the Orphans of the Industry."

### Capital Tied Up

With reference to the second paragraph of Mr. Wallace's letter, the relationship between interest in "capital tied up in the finished product stored in the mill" and the "reduction in costs for large runs" is important. Especially so if the quantity of the items stored to obtain the large run exceeds three months' sales. For a "rule of thumb" where average cost of one ton of paper is $200, the interest cost per month is $2 per month per ton. I must add this comment. The common situation in American paper mills is that customer service is the governing factor generally. In other words, the size of inventory of each item carried is primarily decided by the quantity required to meet customer demands for overnight service. The limitation imposed upon the total inventory is often the physical capacity of the warehouse rather than the capital which is tied up in the paper stored in the warehouse.

### More Economical . . . ?

With reference to the third paragraph, it would be "more economical to remove the stock paper (for firm orders) to a special area awaiting shipment instructions so as to facilitate stock-keeping and stock administration and to avoid misleading by too large a stock" provided the special area, which we call "make-up area," is large enough. We find that this not only requires a larger make-up area (two carloads of capacity for each destination piled an average of one load up) than we can afford but it also adds one move or re-handling. To load stock directly from the warehouse area eliminated the move from the warehouse to the make-up area. It has been less costly to use clerical manpower and data processing equipment to control the allocation of unsold stock to customers than it would be to incur the cost of the extra re-handling. Our balance of available inventory of each item is as reliable as it would be if the available inventory were kept separately in the warehouse.

### First In—First Out?

With respect to the fourth paragraph, we "would be interested to know how he can work on the first in-first out principle under" the conditions of a stock room having some items four pallet loads deep. There is great danger that old paper at the rear will not be shipped, if the warehouse foreman does not take the necessary action to turn over his stock. This he does by removing the rear pallet loads every time replenishment orders are received from the finishing room. Then, rear pallets are placed in front of the new loads. A check is made at physical inventory taking time to verify that this has been done. Of course, if there are two or more rows of an item, the problem is simplified because then the one row is removed entirely before starting on the second.

### Racking Preferred . . .

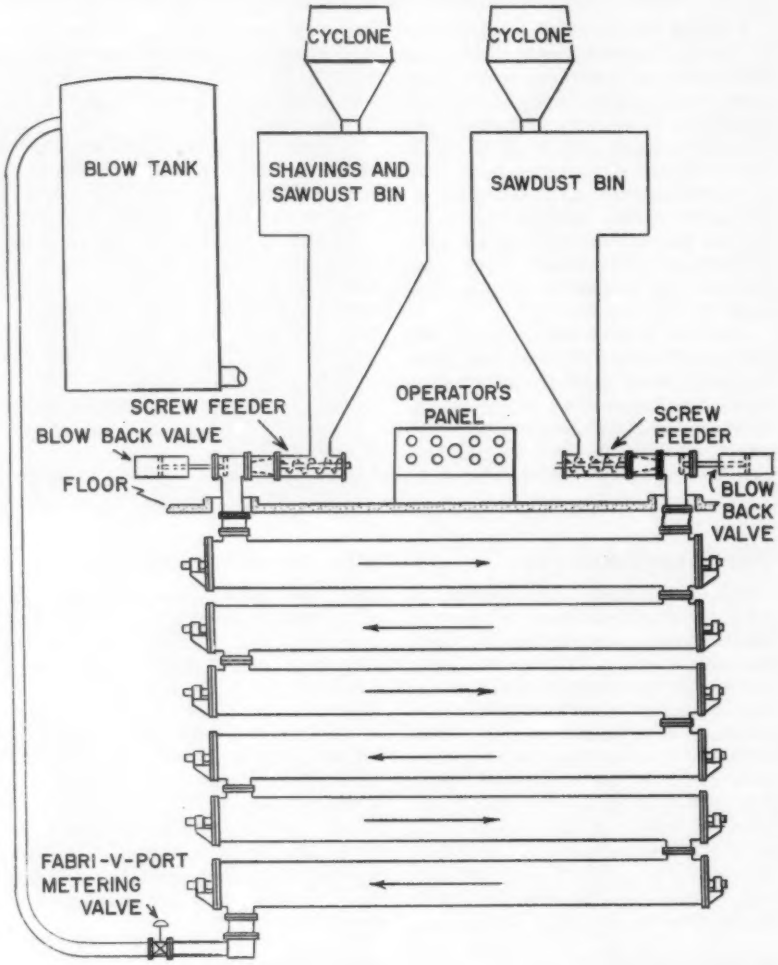
With respect to the last paragraph, I agree that racking of slow moving items is to be preferred. Here again, it is a refinement which has to be justified by local conditions. If there are 1,000 items for which sales for three months amount to less than a pallet load, the cost of racks must be justified by the saving in re-handling of top pallet loads to get at the bottom without racks. If, however, there are only 200 items, the small cost of racks probably will be absorbed in a normal maintenance budget. However, Mr. Wallace's principle is entirely sound, especially for items which are active but shipments are limited to one or two cartons instead of less frequent shipments of 1,000 lbs. once in three months.

► **Our expert will continue to answer questions dealing with points raised by his nine-part series, "Something Can Be Done About the Finishing Department," which was concluded in our June 20 issue.**

# Kraft Pulping of Sawdust and Shavings in a Pandia Digester

**An up-to-date report on the wood utilization program at Potlatch Forests, Inc., Lewiston, Idaho mill and recent improvements in the pulping operation.**

The pioneering work in the pulping of sawdust in a continuous digester by Potlatch Forests Industries, Inc., was first reported in detail in the December 14, 1959, issue of PAPER TRADE JOURNAL. Since that report further changes and modifications have been made in the system including the method of handling shavings and the cooking conditions in the digester. Only one other mill in the country is pulping sawdust by the kraft process in a continuous digester. That is the Camas, Wash., mill of Crown Zellerbach Corp. The woods used include ponderosa pine, larch, white and red firs, white pine, cedar and spruce.




### Problem of Shavings

Planer mill shavings contain good fibers for pulping but they are bulky and difficult to handle. The company first tried partially compressing the shavings into lumps similar to briquettes based on its experience in the manufacture of "Pres-to logs." By this method some of the fibers in the shavings were broken or damaged and other problems were presented by this method of handling. After further investigation, it was found best to mix the shavings with sawdust and cook them together in the Pandia digester. The use of chips with sawdust in the Pandia unit was discontinued so that all chips are now cooked in the stationary digesters and sawdust, shavings, veneer waste and fines screened from the chips are cooked in the continuous digester.

### Waste Handling

Sawdust from the sawmill on the site is carried by belt for storage in two large steel silos. Sawdust is received also from two of the company's other sawmills by truck and railway. Shavings from the sawmill planer and fines from the chip screens are mixed with the sawdust. The mixture is blown from the silos a distance of about 400 feet to two steel hoppers, one each located above the two screw feeders supplying the continuous digester. The level in the hoppers is controlled by bin level indicators which automatically stop and start the blowers on the pneumatic system and the turntables removing the sawdust from the bottom of the silos.

### Feeding the Digester

One screw feeder is located at each end of the first tube of the digester

Based on a paper presented by Robert Linkhart, chief chemist, pulp and paper division, PFI, at the Chemical Utilization Session of the 1960 Forest Products Research Society National Meeting in Montreal on June 6.

as indicated in the sketch. Each feeder consists of a 15-inch screw driven by a 200-h.p. a.c. motor through an adjustible speed dynamatic clutch and gear reduction unit. Two feeders were originally installed to permit feeding sawdust with one and chips with the other. Hot black liquor is fed into the bottom of the hoppers above the screw feeders to serve as a lubricant. The waste wood material is formed into a plug by the screw feeder and then enters the chemical inlet chamber where steam and white liquor are introduced and the material drops to the screw conveyor in the first tube of the digester.

***"Sawdust from the large saws with wide kerf, normal to sawmill operation, contains fiber. Though many of these fibers are cut, this short fiber stock makes good filler stock to blend with the pulp from regular chips. When it was discovered that sawdust tends to pack in a stationary digester, another method of cooking was sought and result in the successful use of the Pandia continuous digester."***

### Cooking Conditions

The digester is equipped with six 42 inch diameter by 40 feet long cooking tubes. Each is equipped with a screw conveyor driven by a 7.5-h.p. a.c. motor through an adjustable speed dynamatic clutch and gear reduction unit. Pulp is continuously discharged from the end of the last cooking tube through a special Fabri "V"-port metering valve and a blow line to a live bottom bin. From the bin the pulp is fed to Valley Iron Works screw press washers. Typical operating conditions are 130 pounds per square inch pressure with temperatures ranging from 345°F. in the second chamber to 330°F. in the bottom (last) tube. Thus, the average temperature is close to the 340°F. maintained in the mill's stationary digesters. It is believed that the lower temperature in the last tube and the back pressure in the long (400 feet) six-inch blow line prevents damage to the pulp in blowing, which is one of the problems in continuous kraft pulping. The sawdust mixture is cooked to two or three points higher permanganate number than the chips in the stationary digester. This permits higher strength and lower white liquor consumption without any difficulty in bleaching the blend of the two pulps. The ratio of white liquor to wood in the continuous digester is approximately the same as for the chips in the stationary digester, although cooking time in the former is only about 35 minutes. White liquor requirements were 30 to 40 per cent higher previously when chips and sawdust were cooked together in the Pandia unit.

### Pulp Quality

Robert Linkhart, chief chemist had this to say about pulp quality. "From a study of our sawdust cooking, we believe there is only a slight loss in strength by cooking in this continuous digester unit. This is based on comparison with cooks made in the laboratory experimental stationary digester. This loss could be accounted for by the shorter cooking time in the continuous digester. Due to the mechanical cutting of the fibers there is, of course, some loss in strength when compared to normal mill chips cooked in a stationary digester. However, when blending the pulps together in the mill, there is very little effect on the strength compared to mill operation on straight chips. Laboratory work on blending shows that with blends in the range used in the mill, the sawdust pulp does not have near the effect in reducing the strength of the blend as would be expected from the quantities and strengths of the two separate pulps. This proves that the sawdust pulp is very useful as a filler stock."

### Liquor Control

It is very important to control the amount of liquid in the digester. If too much liquor is added there is a tendency to wash some sawdust along past the screw conveyors in the tubes, so that it is not properly cooked resulting in shives in the finished pulp. If there is not sufficient liquor the mixture in the tubes becomes too thick with the result that the drives on the screw conveyors in the tubes are overloaded. This was solved at Lewiston by adding a black liquor feed line. The valve on this is controlled by the operator on the basis of the amperage of the conveyor drive motors. In later models Black-Clawson is reported to have solved this problem by provision for the addition of excess liquor at the chemical inlet chamber. Under the first screw there is a screen grid built in through which excess liquor may be drained out of the stock and dropped to a tank for re-circulating. The white liquor is added on the basis of requirements for cooking, and sufficient liquor is re-circulated to maintain mixture enough to have some drainage in the first tube.

### One Man Per Shift

The continuous digester and the screw press washing system were installed in a new paper machine building separate from the rest of the pulp mill since it was originally intended to use this pulp only in the new paper machine. It was designed to be operated by two men, one on the digester and one on the washing system. However, now both operations are run by one man. This has been made possible by improved instrumentation, relocation of instruments, mechanical improvements, and knowledge gained by operating experience.

### Bleaching

The washed pulp from the screw presses is blended with the pulp from the stationary digesters and sent to the bleach plant which has recently been expanded and improved. This will be the subject of an article in an early issue of PAPER TRADE JOURNAL. As stated earlier, no difficulty is experienced in bleaching the blended pulp, although the sawdust mixture is cooked to a higher permanganate number.

Output of the Pandia unit is up to 200 tons per 24 hours. The sawdust pulp provides 15 to 20 per cent of the total pulp output. It is felt that the sawdust pulp has a beneficial effect on the quality of the products produced and could be used in higher quantities.

### Conclusion

It is thought by Potlatch personnel that with continuing efforts of equipment manufacturers and the mills, continuous cooking will eventually replace stationary digesters. The use of this type of continuous digester permits the utilization of large quantities of sawmill waste not otherwise possible and still produce a high quality product.

# New Developments in Coating Further Complicate Selection of Method Used

**Rapid progress and changes are being made in the coating field with frequent introductions of new chemicals and equipment. Advantages and disadvantages of each basic method are discussed.**

**Alexander F. Bobreski,**
Coating Supervisor,
St. Marys Kraft Corp.,
St. Marys, Ga.

There are many aspects of the problems of coating, and the one discussed here is the selection of coating methods. Little or no mention is made of the necessary auxiliary equipment such as drives, winders, unwinds, drive controls, drying ovens and coating formulations, all of which are very important in realizing a satisfactory coated web.

Information for this paper was acquired from coating projects using a pilot plant coater, "on the machine" coating, and field service work. Of the methods discussed, cast coating with a polished drum is the only method with which no working experience was available.

This study refers chiefly to the degree of uniformity of coating coverage and weight application to a web surface.

Figure 1 is intended to show the relative degree of surface smoothness for consideration in selecting suitable coating methods. These are:

1. Considered to be the smoothest type of surface available, found in webs like cellophane, cellulose acetate, glassine.
2. Relatively smooth, considered of webs like tissue, writing and printing papers, low weight paperboard.
3. Relatively rough, considered of webs like heavy weight paperboard, cloth, felt, etc.
4. This surface is not of the preceding types but is that of an embossed surface where the surface pattern is desired.

Here it is assumed that the successful use of one coating method for application of one type of coating for a certain web may not necessarily be suitable for use on the same web with another kind of surface treatment.

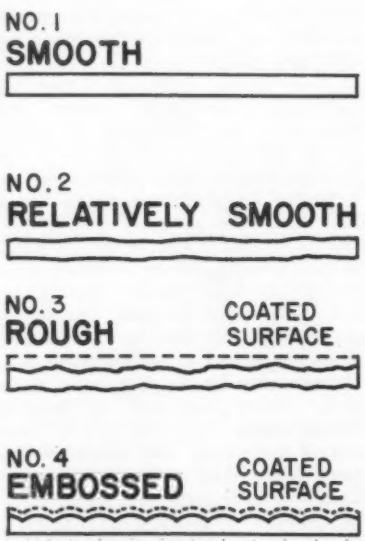



**Figure 1. Relative degrees of surface smoothness**

For example, density of web, porosity, sizing treatment, surface smoothness, etc., all have a part in determining the end coating result.

Figure 2 shows the results of each of three different coating methods on the same web. This was a felt type web made from waste materials. The coating was a latex to be used as a prime coat applied for complete surface coverage at a minimum amount and was the same in all cases. The web surface is considered relatively rough. It will be noted that there are three different patterns on the surface.

**Pattern 1** is from a squeeze roll application, the same type as used in size press operations. This pattern is typical of squeeze roll application and varies greatly in degree with type of coating and roll pressures used.

**Pattern 2** is from a four roll reverse roll coating method. It will be noted that there are rather heavily coated areas and some uncoated high spots. There was not sufficient body in the coating to cover the high spots without excess flowing.

**Pattern 3** is from an air knife coating method This shows the smoothest pattern because the air doctor is inherently dimensionless at short distances.

When one becomes involved in evaluating coatings and develops the desired coating, he is confronted with the problem of selecting the coating

Based on a paper presented at a meeting of the Southeastern section of TAPPI.

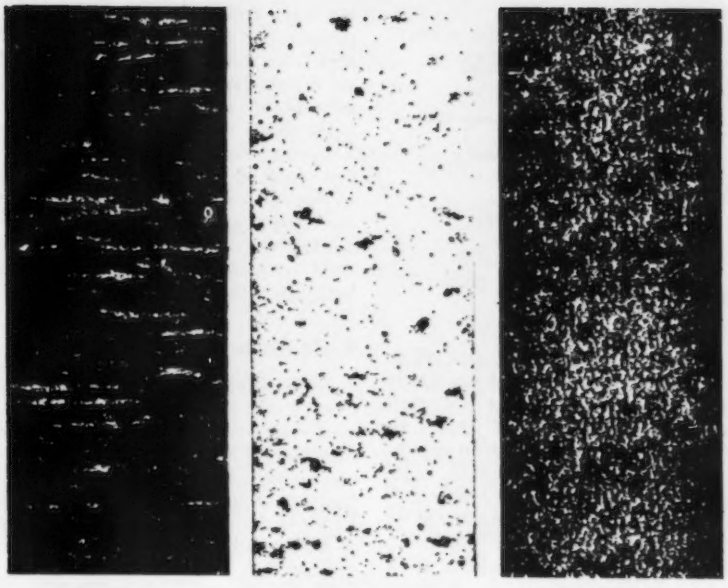



**Figure 2. Three different coating methods on the same sheet**

method for applying his coating. At this point, mention is made of the fact that the most important thing in any coating operation is a correctly formulated coating for commercial coating application. Such a properly formulated coating for one set of conditions may be entirely unsuited for another set of operating conditions. One can usually modify a formulation to a coating method but one cannot readily modify the method to suit the coating.

The coating methods that will be discussed for coating application are the following:

1. **Air Knife**
2. **Spray**
3. **Gravure**
4. **Knife Blade**
5. **Cast**
6. **Smooth Roll**
7. **Dip**
8. **Trailing Blade**
9. **Champflex**

The above by no means limits the coating methods available but will serve as a guide in selecting the desired coating method. From this guide, any combination of special or complex machine coating methods can be used.

In discussing the various coating methods, the desirable characteristics as well as the corresponding shortcomings of any specific coating method are mentioned. Each coating method has its particular limitations and must be considered for each specific job.

Before starting on the coating methods, it may be well to review some reasons for coating paper and other webs. Some of the reasons are:

1. General upgrading of web
2. Water & moisture proof properties.
3. Solvent proof properties
4. Grease proof properties
5. Limited weatherproof properties, such as billboard paper
6. Resistance to scuffing, abrasion
7. Heat sealing properties
8. Improve printability as well as masking original surface appearance of paper
9. Sales appeal
10. Others as requirements dictate such as improve the clarity of films as with polyethylene.

Once the desired coating formula has been selected through simple preliminary drawdown tests, the commercial coating application must be determined. In many cases an original coating formula was satisfactory as predetermined in simple drawdown handsheet tests, but was not suitable for commercial coating application because of such conditions as sensitivity to shear properties (inherent to many emulsion coatings), gelling or solidification, solids separating, lack of proper solvent and others. In such cases, coating had to be reformulated.

The coating methods previously mentioned have certain inherent features. These are now briefly discussed.

### Air Knife Coating

Air knife coating has one chief characteristic. This is the fact that the coating will conform to the surface of the web. Because of this, paperboard, paper and an embossed surface can be coated satisfactorily. The method of application calls for applying an excessive amount of coating to the web by a pickup roll. This excess is then doctored by a narrow stream of air from the air knife. Since the stream of air used for metering control is dimensionless, it will shear off excess coating and leave an image of the original surface present. This can be used to advantage particularly with an embossed surface since the pattern will be retained. Also, if the surface requires a smoother appearance on a non-embossed web, as is true in many cases, calendering can be used. Air knife coating may be considered for practically any web, except one which is rather porous, where only a surface treatment is required. The air knife method has no physical contact at metering area. No metering rolls or cleaning doctors are necessary and therefore there is no problem of pigments scratching the rolls which would have to be reground. One drawback to air knife coating is the possible blow back of coating against

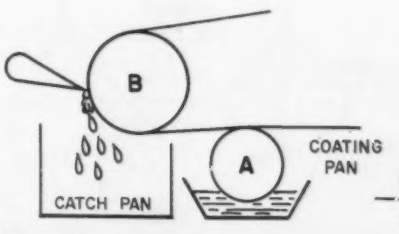



**Figure 3. Air knife coating**

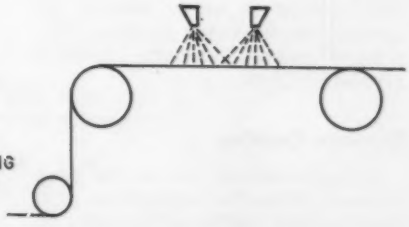


**Figure 4. Spray coating**

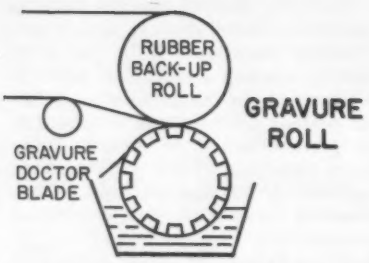



Figure 5. Gravure method

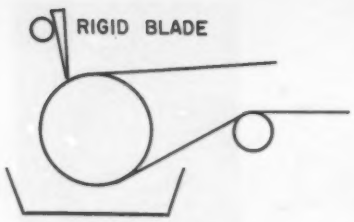



Figure 6. Rigid blade

the lip opening, causing localized plugging. This would cause streaks while the lip is plugged.

Coating weights can range from approximately 3 to 20 pounds per ream (24 x 36—500). They can be controlled to a degree by the coating viscosity and solids content, and by the inlet air pressure which generally may vary from one to six pounds gauge pressure.

## Spray Coating

Spray coating has as its chief characteristics the application of a premetered amount of coating in spray form. Because the spray is dimensionless, it can be applied to relatively porous surfaces, irregular shapes or rough surfaces. If application methods were used on the porous webs whereby an excess is applied and subsequently doctored off by any of the conventional systems, some of the excess would initially soak into the porous surface and could make the process economically unsound. Spray coating is generally not considered for a relatively smooth flat surface as it is difficult to realize satisfactory control and a completely uniform coating, especially when any application variable is changed. However, it can be considered for coating light weight tissues where contact with excess coating by roll coating applications might break the web. Spray coating is suitable for the application of one to ten pounds per ream.

A very important requirement of spray coating is the use of a relatively low solids content and dirt-free coating so as to prevent the nozzles from becoming plugged and to provide almost absolute uniform pressure control.

## Gravure Coating

Gravure coating has as its main characteristics the application of a very uniform, lightweight coating on a relatively smooth surface, especially as in carbon paper or in transparent film using both gravure and offset gravure methods. This is especially important when applying hot melt inks. The importance of this uniform, lightweight application can be appreciated by the fact that the coating deposit of a hot melt ink is difficult or cannot be easily measured by a micrometer on a single sheet. A simple accurate means would be a light intensity variation method. This involves using a bright light source on the opposite side of the coated web for checking non-uniformity of coating weight by the varying intensity of the light source. This is a quick non-destructive, dimensionless test method that may also be applied in other cases.

The inherent drawback of gravure coating is its rather limited application when different coating weights or webs are used. The coating weight can be changed in a limited range by the solids content of a solution coating but not for a hot melt ink which is 100 per cent solids. Different coating weights would require a roll with a different pattern.

One-time and multiple carbon paper is usually coated by a gravure method. Plastic films can also be coated by either direct or offset gravure when a low coating weight is desired. A relatively smooth surface is necessary for lightweight uniform coating applications. Coating weights can vary from approximately 1 to 10 pounds per ream by offset gravure and from 1.5 to 16 pounds per ream by direct gravure and from 4 to 24 pounds by direct gravure using a helix shape cell pattern. The coating is premetered in all cases. The gravure method is excellent for day-in-day-out coating applications on the same web and web width. Varying widths on the same roll cannot be used readily because of coating buildup on the edges.

## Knife Blade Coating

Knife blade coating is noted for overall simplicity and is generally used for coating relatively porous materials like cloth, felts, blankets, etc., where a rather smooth heavy coating application is necessary. Paper is rarely coated by this method. A high solids, high viscosity coating can be used.

The knife blade is a stationary, rigid blade usually with a bullnose edge although other types of edges may be used. Note the similarity of this method with trailing blade discussed later. The coating method is relatively simple in that the coating is applied before the knife and is doctored by the knife at the line of contact.

The main disadvantage of the knife blade is the difficulty (in most cases) to control the operation when applying a lightweight, uniform film. It is difficult to maintain a perfectly straight surface on the knife blade. Even with a very straight surface for lightweight applications, any variations in paper caliper, tension or the presence of any foreign matter will form a high spot on the surface and cause the paper to tear.

## Cast Coating

Cast coating produces a superior gloss type finish without the sheet

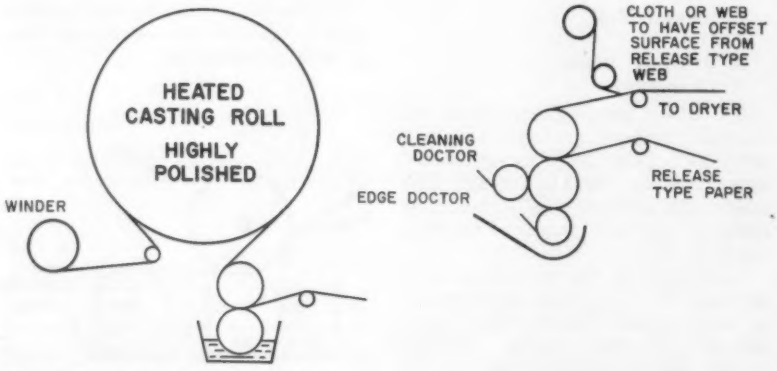



Figure 7. Cast coating methods

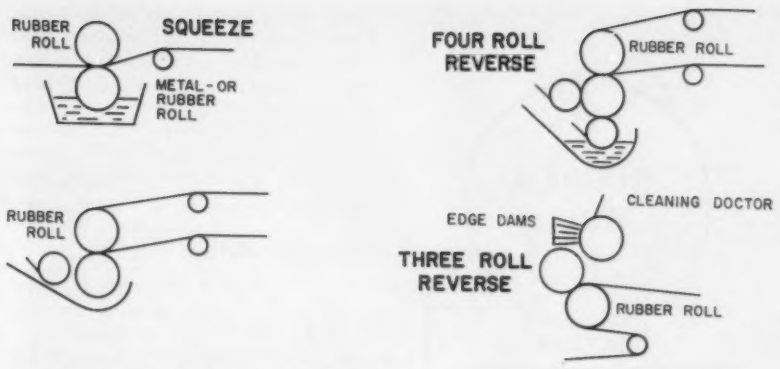



**Figure 8. Various roll coating methods**

requiring supercalendering. The finish is obtained by offset of a very highly polished metal surface onto the coated surface.

The coating is applied to the web surface, by squeeze, reverse roll, knife, or dip roll. The coated surface is directed immediately against the face of this polished drum, dried, stripped from drum and rewound. The mirror image of the casting drum is offset onto the web surface. A stainless steel belt could also be used instead of the drum. Another variation of cast coating is to use an inherent release type surface like cellulose acetate or glassine as a substitute for the casting drum. In this case the coating may be applied to the release type web surface and then brought in contact with the sheet to be coated. The coating is dried and the sheet stripped from the release type web and each is wound separately.

### Smooth Roll Coating

Smooth roll coating (reverse method) has as its main characteristic a wide range of flexibility and is widely used for the following reasons:

1. Coating thickness on applicator roll will remain relatively constant in spite of varying line speeds.

2. Coating weights can be changed easily by changing the applicator roll speed for a corresponding coating weight change with the line speed remaining constant. This method is also used in controlling a uniform coating weight by installing beta ray gauges on uncoated and coated web.

3. Web width is changed easily by relocating edge dams or edge doctors.

4. A wide range of webs used.

5. A wide range of viscosities and solids content of coatings can be used with the understanding that these are properly formulated.

6. A smooth and usually shiny film is realized with a film forming type coating. A squeeze type coating method will give a dull surface.

One of the main restrictions of this type of coating method is that a uniform low coating weight below 6 to 8 pounds per ream is usually not possible, especially on hot melts. Very light weight porous type tissues usually cannot be coated because of relatively low tensile strength, both dry and wet. This causes the paper to stick to rolls by the coating which acts as an adhesive and the tissue breaks.

Uniform lightweight coatings cannot usually be applied by reverse roll coating because of the combined tolerance of the bearings and both rubber and metal rolls. Also the use of extra rolls for various purposes has a tendency to cause air entrainment in the coating.

With a squeeze type coating method the film is split as with a gravure roll application. The surface film is dull as compared to that realized by reverse roll but can be of low uniform weight, if necessary as determined by pressure on the rubber back up roll. By adding more transfer rolls, as in a printing press the film is further subdivided for an even smoother surface and lower weight.

### Dip Coating

Dip coating may be done by two different application methods. One, as the name implies, involves dipping either partially or wholly of the web around a roll immersed in a coating solution. The other method, also known as the bead coater, requires the web to remain completely outside the coating solution and become coated by a raised bead or bubble of coating on an applicator roll by a surface tension condition. In the former method, the coating can be applied either to one or both sides of the web depending upon the level of the coating. This method has the advantage of simplicity in design, operation and control. The operating controls are the viscosity of the coating, porosity of the web as well as the dwell time of web in the coating. This method is used for coating linoleum type felts, insulating papers and different webs which may be used alone or in laminating operations.

The main disadvantage of this type of coater is that the coating solids content has to be rather low when solutions are used. This low solids content requires a larger drying capacity. Also hot melt type coating requires a fairly elevated temperature so that ease of surface penetration results when a saturation is desired. The other type of dip coating or bead coating has as its chief feature the application of an extremely accurate film thickness. This is probably the most precise coating method available. This method can also be used for a simple check to determine stability of a coating if ribbing,

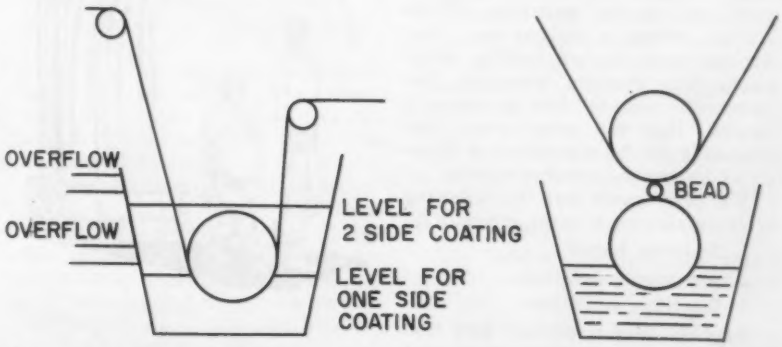



**Figure 9. Dip coating methods**

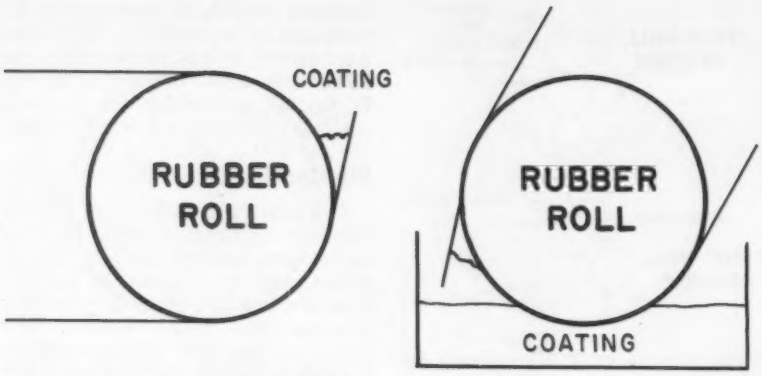



**Figure 10. Trailing blade methods**

streaking or pin holes are evident.

Bead coating is used chiefly for coating photographic sheets where film thickness has to be extremely accurate and is also used in the plastic film industry in special cases.

The main disadvantage of bead coating is the relatively low speeds that can be used since any appreciable increase in speed will break the film. Also very close control of the coating conditions such as temperature, viscosity, and freedom from foreign matter are required.

### Trailing Blade

Trailing blade coating has its main characteristic the ability to apply high solids coating by a simultaneous smoothing and metering action at a wide range of speeds and in excess of 2000 f.p.m. Coating weights can be as low as 1.5-2 pounds per ream, up to 15 pounds and over. Coating weight variation is usually obtained by a combination of coating solids and viscosity change. Blades last from approximately one up to five days and over depending a great deal on the abrasive action of coating.

The biggest difficulty that has been heard of and one which we have experienced is the streaking of the coating during a coating run. Most articles that discuss trailing blade application mention streaking but practically none tell how streaking is caused. However, some state that streaking can be minimized or eliminated by going to higher speeds.

We have found that the following circumstances can cause streaking:

1. Fuzz on paper.
2. Too much moisture.
3. Too little moisture.

Another very important fact that I believe causes streaks but which I have not been able to prove is the possible selective penetration of binder into the paper instead of the uniform penetration of both binder and pigment. When this happens, a pigment enriched coating with much less binder remains on the surface to cause a streaking condition. In some coating runs where streaking occurred, routine tests for coating solids and viscosity showed that the per cent solids increased and viscosity decreased. One of the few things that can cause this is a selective removal of binder leaving a pigment-enriched coating.

Some work carried out by James Casey and C. E. Libby (1) jointly and by Arnold Eames (2) has indicated that a selective penetration of the binder into certain paper surfaces does occur. Under laboratory conditions it would be difficult to duplicate the streaking conditions which appear on the machine. These authors indicate strongly that surface conditions of paper or paperboard should be critically controlled for uniform coating application. The coating method itself should not be blamed for streaking if all the other conditions are not suited for best coating results.

**"Yeh, that last slab was heavy."**

### Champflex Method

The Champflex method is very similar to the trailing blade method except for the following difference:

Instead of a stationary blade, there is a slowly revolving partially enclosed rod rotating in a reverse direction to the travel of the paper. There is enough flex to the rod so that localized pressure or blade tensions can be made by screw adjustments.

The coating characteristics appear to be similar to that of the trailing blade. Streaking occurs in this method, but the streaks, generally speaking, are much shorter and narrower than that noticed in a trailing blade application. These smaller streaks undoubtedly are caused by the smoothing reverse action of the rotating rod. However, conditions can exist where large continuous streaks are evident.

### Conclusions

The preceding are believed to be the main types of basic coating methods that are usually considered for coating application. With the sharp rise in demand for coated papers in the past decade, it becomes increasingly important that the most satisfactory method or combination of coating methods be used.

It is my opinion that a great deal of work has to be done in evaluating and understanding paper surface conditions for subsequent coating operations. This is especially true when one considers that "on the machine" coating is done at practically the same relatively high machine speed as without coating operations and that high waste is to be avoided.

It may be concluded that the selection of the most suitable coating method would be based on evaluating assembled data such as end use of the product, type of web, surface condition of web, type of coating necessary, proper formulation of coating, economics, etc.

#### LITERATURE CITED

1. Casey, J. P., and Libby, C. E., Paper Trade Journal, (Dec. 16 and 23, 1948, No. 25: 522-529; No. 26: 530-536).
2. Eames, A. C., TAPPI, Jan., 1960, 2-10.

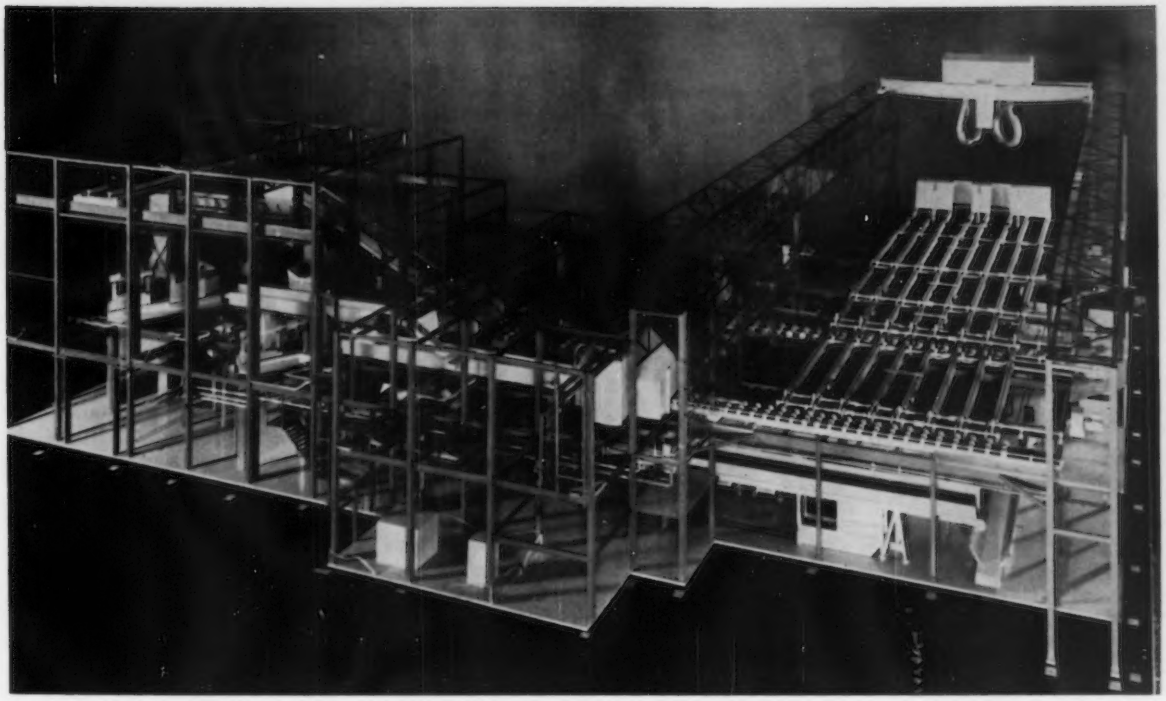


**Figure 1. Celgar's kraft pulp mill woodroom is shown here as constructed in model form during design. Log bundles can be handled from trucks, rail or river by means of gantry-type crane which will place the bundles on the log deck. The woodroom is scheduled to go into production this fall to stockpile chips for winter start-up.**

# Design of Celgar's New Woodroom Presented Interesting Problems

Celgar Limited is building a 500-ton bleached kraft pulp mill near Castlegar, the first in British Columbia to be located away from tidewater. The mill is scheduled to go on stream late this year and will produce bleached pulp early in 1961. So that chips can be stockpiled during the fall for winter start-up, the woodroom will be among the first facilities to go into operation.

## Use of Models

To assist the engineers during design and to provide a better picture for contractors during quoting, Celgar had some of the key units of the new mill produced as models by Industrial Models, Inc. Once bids had been accepted, the woodroom model was moved to the site for use during construction and for reference during the training of operating personnel prior to start-up.

## Wood Sizes Varied

In the design of this woodroom, some rather unusual factors were faced. Celgar, as an "Interior" pulp mill, has a wood supply with a considerably smaller average diameter than West Coast operations, but still containing appreciable volumes of large wood. It was desired to receive water, rail, and truck deliveries of wood, but the bulk would arrive in log bundles floated down the Columbia River which has close to forty feet of annual variation in level at the plant site.

Although the sawmill chips are expected to play a part in the wood supply, the woodroom was to be capable of handling the whole mill requirements, including allowance for hard barking and impeded water delivery during severe winter weather.

The final design is shown in Figure 1. The combination of the ring-type hydraulic barker and horizontal feed chipper was chosen to give clean barking, minimize manpower requirements, and permit handling of long logs. The volume of wood to be handled required two barkers, and the range of wood diameters to be handled caused the selection of 30 inch and 42 inch diameter machines. Since the small machine is more efficient on the smaller logs which predominate in the supply, the feed deck is arranged to crowd the small barker, with larger logs, crooked logs, and excess small logs diverted to the 42 inch machine.

## Wood Receipts

The problem of handling truck, rail, and water delivery of wood, and the river level variation, was solved by bundling all water-borne wood, and installing a 60-ton capacity, 66-foot span bridge crane, operating on

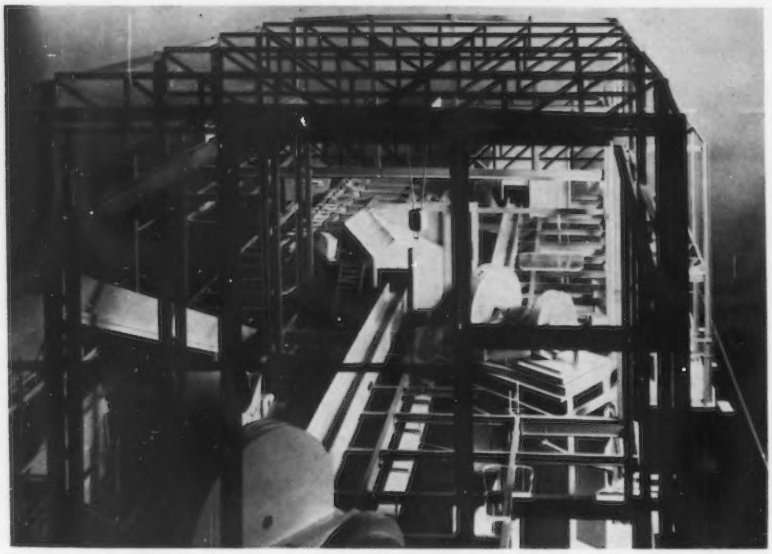


**Figure 2. Two combinations of hydraulic barkers and horizontal chippers will handle large and small logs. A bar press and hog handle refuse from both woodroom and Celgar's adjacent sawmill for conversion into steam. Chips will be held primarily in outdoor storage area.**

a 360-foot runway, extending over the road and track on the land end, with the other end cantilevered over the river. This crane structure is visible in Figure 1, a view looking toward the river. In operation logs from land or water are placed on the chain decks in the background. The outside deck operator spreads the bundle, and by controlling deck movement and lift skids, straightens and separates the logs. The inside deck operator sorts logs on to the large barker rollcases, or passes them on to the small barker rollcases in the extreme foreground. Since there are no breakdown saw facilities, any oversize logs are picked up by the crane operator with an auxiliary hoist and set off the decks for handling by the Celgar sawmills.

## Two Barkers—Two Chippers

Figure 2 shows the main operating floor. The 154-inch chipper in the left foreground handles logs from the 42-inch barker, while the 112-inch chipper in the right center serves the 30-inch barker.

The rollcases which divert logs from the main deck to the 42-inch barker are high speed—250 f.p.m.—to minimize interruption in log flow to the small barker. This is too fast for the 42-inch barker feed, and so a transfer deck was inserted to smooth out flow to the barker. The 102-inch swing cut-off saw is seen at the extreme left background.

The refuse conveyor system is visible under the operating floor in these pictures. Drainer bottom conveyors from the barkers and the decks are combined and fed to a hog and bark press. Sawmill bark and wet waste is pumped to this woodroom, drained, and pressed with woodroom refuse. All water is collected, screened through five vibratory screens to remove coarse material, then passed to a 100 foot diameter clarifier located outside for final purification before re-entering the river.

High pressure water required for the ring barkers, and steam required for actuating log handling equipment, both in the pulp mill and sawmill woodrooms, is generated in the pulp mill power boiler group.

## Screening after Storage

Chips from the woodroom are conveyed to silos or to outside storage. To ensure against possible dirt pickup in these storages, the chip screens are located in a separate building following the silos and pile reclaiming point.

The woodroom is designed to operate with a crew of nine men and a foreman. This includes the boom boat crew who position logs beneath the crane.

The model from which these photographs were taken is built on a scale of $\frac{3}{8}$ inch equals 1 foot. Industrial Models, Inc., personnel have been installed in the offices of the engineers, to permit close co-operation between the model-makers and the engineers. As well as this woodroom, the recovery and power boiler group, and the digester and pulping group are being modelled.

**"What proof you got that there's still a leak in that acid line?"**

# NEW LITERATURE

**Worm Gear Speed Reducers**

Introduces Link-Belt's completely new line of fan-cooled worm gear speed reducers in 25 types and over 135 sizes. Book 2824. Link-Belt Co., Prudential Plaza, Chicago 1, Ill.

**Typical Applications for Vari-Bow Rolls**

Gives a brief resume of the applications of Vari-Bow rolls to converting operations. Bulletin. Mount Hope Machinery Co., 15 5th St., Taunton, Mass.

**An Everyday Wonder—Paper**

The booklet "An Everyday Wonder—Paper," which was first produced by APPA in 1956 has been revised and updated. "An Everyday Wonder—Paper" is now available in quantities for distribution. It has been an extremely popular booklet, enjoying a first edition distribution of 225,000 copies.

The new booklet may be purchased now at 10 cents per copy up to 1,000 copies and 5 cents per copy in quantities of 1,000 or more. In addition, companies desiring credits may have this done on orders of 1,000 or more at an additional cost of $12.50 for the first 1,000 and $3 for each additional 1,000 imprinted.

Orders should be addressed to the American Paper and Pulp Ass'n., 122 E. 42nd St., New York 17, N. Y.

**Solids-Contact Reactors**

This revised 20-page bulletin on solids-contact reactors for water clarifying and softening has many new photographs and drawings illustrating various types and their basic design considerations. Also contains information on chemical feeds and auxiliary equipments. Pub. 5001-C. Cochrane Corp., 17th St. below Allegheny Ave., Philadelphia 32, Pa.

## Papermaking Practice

A new book by H. Hardman and E. J. Cole is based on a modified version of a series of articles, 36 in all, which were previously printed in the British publication "The Paper Maker." The book was published in Great Britain by Manchester University Press and in Canada by University of Toronto Press.

It is intended for the students of papermaking either at the University or in the mill. The early portion of the book, about 25 per cent, consists of short chapters dealing with the various pulping processes; the balance is devoted to papermaking from stock preparation through to reeling, slitting and rewinding. The scope of the book is better illustrated by the chapter headings as follows: Groundwood; Neutral Sulphite Semi-Chemical Pulping; Sulphite Pulping; Sulphite Pulp; The Kraft (Sulphate) Pulping Process; The Screening of Wood Pulp; The Bleaching of Wood Pulp; Straw Pulping; Stock Chest Design; Stock Flow Systems; Beating; Sizing; Headbox Design; Drainage on the Wire; The Dandy Roll; The Wire; Changing the Wire; Paper Machine Drives; Wet Felts; Suction Rolls; The Press Section; Suction Pick-ups; Some Problems of Drying; Reeling, Slitting and Rewinding; Running the Paper Machine; Slime Control; Bibliography.

Since the book is written for those concerned with the manufacture of paper rather than pulping, the chapters on the pulping processes are rather elementary explanations of these for the papermaker.

The chapters on papermaking, being the more interesting and constituting the major portion of the book, are discussed below.

The chapter on stock chest design is disappointing and in some cases gives an incorrect impression. It is one of the weakest in the book. Stock flow systems, although well enough done as far is it goes, does not go far enough. A much bigger and more detailed chapter is needed here. The short educational nature chapter on beating is one of the best in the book. Although the chapter is very short the main points are clearly made and there is a vast list of references for further study.

The two chapters on headboxes and drainage on the wire are below the standard of the rest of the book which is very high in spite of all our criticism. The chapter on wire drainage could have been expanded to indicate some basic theory and could have included some of the type of operating lore found in E. J. Cole's articles on laying the sheet on the wire and on wire mark.

The second half of the book is strong—the chapters on the dandy roll, the wire, changing the wire, are excellent and that on paper machine drives is very good. Wet felts are well dealt with. The chapter on suction rolls would have been much improved by leaving out the unnecessary mathematics.

The chapter on the press section is first class except that it is based on the old theory of pressing.

Although the chapter on drying is correct and presents some interesting data it should have been expanded along the lines of Montgomery's pamphlet. The chapters on reeling, slitting and rewinding, and on running the paper machine are exceptionally good. They are about the best of this type that have ever appeared.

Every young papermaker could make good use of this book, whether he be technical or practical. It should also be read as a refresher by older papermakers and managerial personnel for a new slant on what goes on on the machines.

Copies of this book may be purchased through the book department of PAPER TRADE JOURNAL. The price is $7.50.

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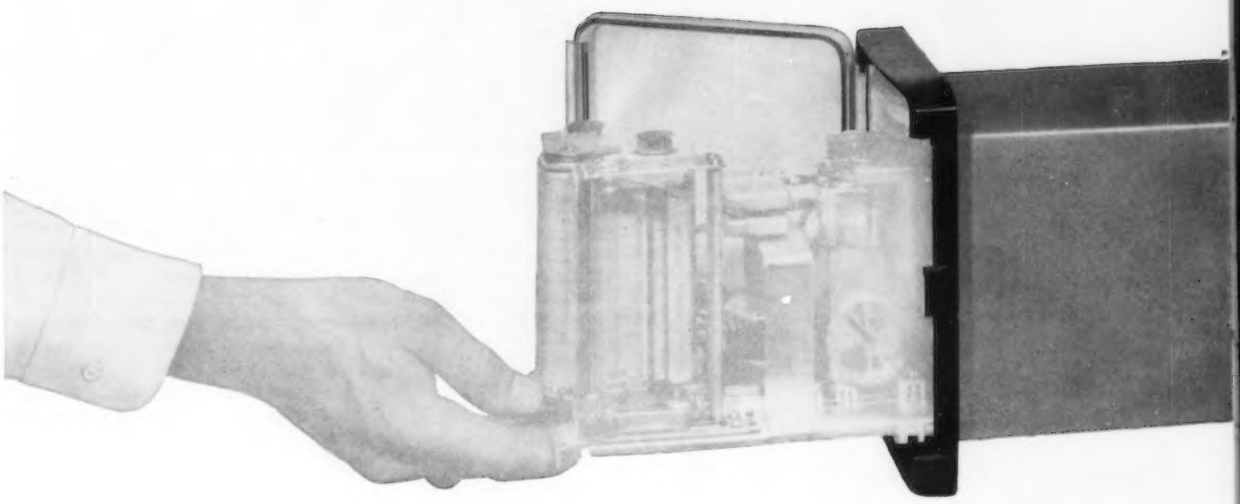

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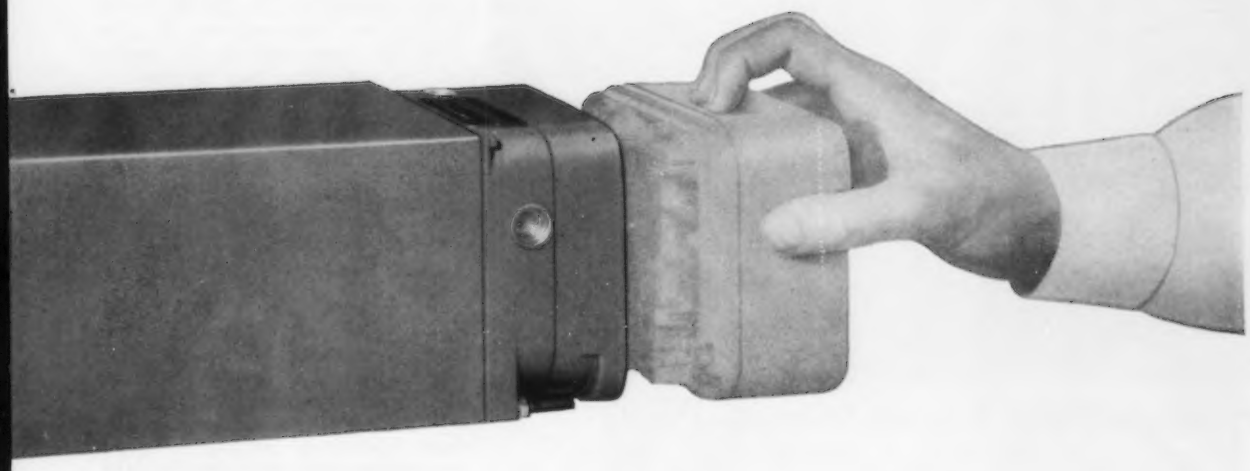

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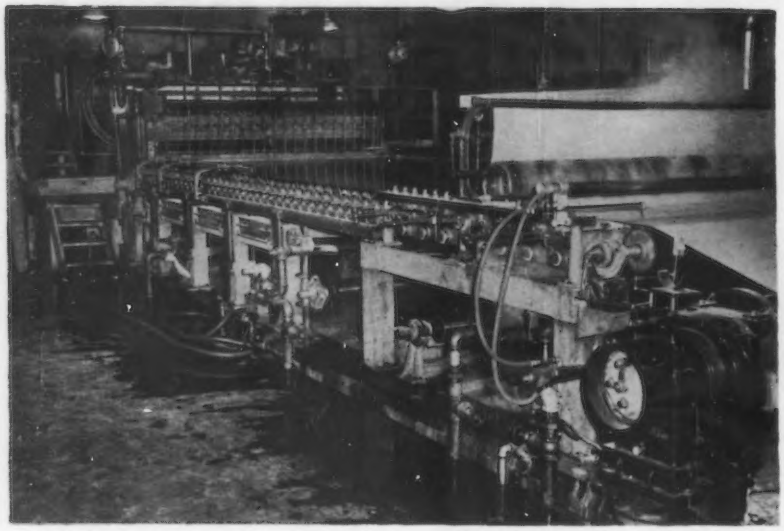
# NEW EQUIPMENT & SUPPLIES



## PVC-Covered Table Rolls Last Longer, Cost Less

At the Moore & White Co. of Philadelphia an innovation has been made part of the fourdrinier section of the paper machine that improves the performance of the machine while increasing the longevity of the conveying rolls. This improvement involves the replacement of brass table rolls with Byers PVC (polyvinyl chloride) pipe and ordinary steel pipe. The unplasticized plastic pipe is "shrunk" onto the O.D. of the metal pipe.

Whipping action is eliminated by dynamically balancing the PVC pipe when it is applied and turning the O.D. concentric with the journals of the conveying rolls. The machinability of PVC simplifies this.

Equally critical are the problems of corrosion from process solutions, and abrasion from the wire. The PVC material itself takes care of the corrosion and abrasion problem. PVC's surface has a lower friction factor than any metal and is unaffected by process acids. Tested for abrasion resistance in sulphuric acid slurries, PVC outlasted even stainless steel. PVC clad table rolls also resist adhesion of the fibers.

Byers PVC pipe can be furnished to clad any size of roll. Most popular roll sizes run from 3 to 6 inches in diameter with an average length of 144 inches.

Cost-per-year is also much lower than the traditional brass rolls provided the rolled journals are made from stainless steel and mounted in automatic friction bearings.

A roll can be recovered at a fraction of the cost of a complete new roll. If the PVC pipe covering ever does fail, it can be easily replaced and the steel roll used again. Rubber and phenolic laminates have been used before; but from a cost and performance standpoint, Byers PVC pipe covering is said to be most satisfactory.

The life of brass rolls is sometimes only 6 months, depending on the various conditions; such as, type of paper, speeds at which the machine is operating, corrosive factors, and the paper's abrasive content.

PVC rolls he installed one year ago have shown no apparent wear. The PVC pipe rolls are supplied by A. M. Byers Co., Pittsburgh, Penn.

### Ductile Iron Pump Series Announced

A complete series of single and multi-stage horizontal pumps cast in ductile iron has been placed on the market by Peerless Pump, Hydrodynamics Division, Food Machinery and Chemical Corp.

Described as pumps with extreme thermal shock and corrosion resistance, the two pump series, designated as the Peerless Type A and the Type TU and TUT, are for intermediate range service. Both the Type A and Type TU and TUT have a fluid temperature range of 350°F.

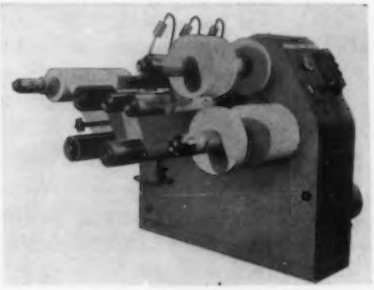
The Peerless Type A pump is a continuous duty, horizontal split case, single stage centrifugal pump. It is available in sizes of 4" and larger; capacities to 60,000 gpm; heads to 400 feet. All types of drives are available for this pump.

The Peerless Type TU and TUT is a horizontal, split case, multi-stage pump. It is available in two stage (Type TU) and three, four or five stage (Type TUT) design. Heads up to 1500 feet and capacities of up to 3000 gpm are handled by this pump. All types of drives may be used.

For a copy of the Bulletin B-1314, write Peerless Pump, Hydrodynamics Division, Food Machinery and Chemical Corp., 2005 Northwestern Ave., Indianapolis, Ind.

### Salvages Rejected Rolls of Paper

A complete line of doctor machines, manufactured and guaranteed by Stanford Engineering Co., Salem, Ill., features Double-Arbor units, standard units and a bench-type model. All are designed to salvage telescoped, unevenly wound rolls and convert them into saleable stock without tying up production slitters for the job. Units not only meet salvage needs, but may serve as stand-by and short-run production equipment.



Built-in quality control features include an automatic web guide that holds side register accurate within .010 inches, a vacuum-controlled brake that keeps web at correct, constant tension and an adjustable speed, tachometer - controlled drive that maintains an even web speed to suit specific operations.

Stanford's Model 182 doctor machine has dual wind-up shafts, permitting various width slitting with staggered rolls. Operating at web speeds up to 1,000 feet per minute, it handles web material rolls up to 20 inches in diameter. The machine may also double in narrow-width rewind

# New Idea in Material Handling Cuts Costs at Bird & Son, Inc.

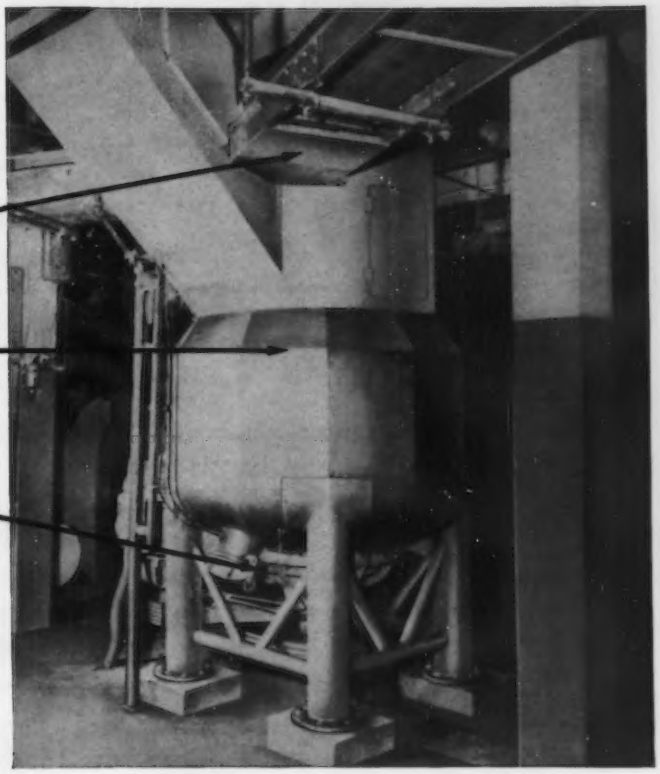
From
Converting Mill . . .

Via Conveyors

To Pulper

To Pump*

To Pulp Mill



## With the Impco Solvo® Pulper

The Model 2U Solvo Pulper, playing a dual roll at Bird & Son, Inc., East Walpole, Massachusetts, has sharply reduced previous material handling costs. It is operating continuously under automatic control as both a material handler and a pulper. Boxboard broke from the converting machines is delivered by conveyors to the Solvo which simultaneously pulps and pumps it to the pulp mill. The units' single 50 HP motor handles both pulping and pump-away demand at a 24 ton/day rate.

This is one of a wide variety of Solvo Pulper applications. Others include de-ink cooking, dry end broke handling, paper machine furnish pulping, transfer of high yield cooked chips to refiners as well as the normal pulping of broke, wet strength and waste paper. Units are available for any capacity requirement.

*The pulping element, extractor plate and stock pump are one rotating assembly.

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# Figures of the Week

**PAPER PRODUCTION RATIO REPORT**—American Paper & Pulp Assn. Figures
(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

| | | | | | |
|---|---|---|---|---|---|
| | May 21 | May 28 | June 4 | June 11 | June 18 |
| 1960 | 98.1 | 97.3r | 96.1r | 98.8r | 99.4 |
| | May 23 | May 30 | June 6 | June 13 | June 20 |
| 1959 | 96.6 | 91.9 | 94.2 | 95.6 | 96.7 |

r Revised.

COMPARATIVE MONTHLY SUMMARIES

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1960 | 96.7 | 97.9 | 98.3 | 97.0 | 97.5‡ | — | — | — | — | — | — | — | — |
| 1959 | 87.8 | 90.5 | 93.2 | 94.4 | 95.5 | 95.6 | 84.5 | 96.0 | 92.4 | 97.4 | 96.2 | 86.6 | 94.0 |

‡ Preliminary

*All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.*

COMPARATIVE YEARLY SUMMARIES

| | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 |
|---|---|---|---|---|---|---|---|---|
| Year to Date | 94.2 | 93.5 | 97.2 | 101.2 | 94.6 | 88.0 | 96.7 | 97.6 |
| Year Average | 92.3 | 91.6 | 96.2 | 97.9 | 90.4 | 87.0 | 94.0 | — |

**PAPERBOARD OPERATING RATIOS†**—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

| | | | | | |
|---|---|---|---|---|---|
| | May 21 | May 28 | June 4 | June 11 | June 18 |
| 1960 | 95 | 93 | 85 | 96 | 93 |
| | May 23 | May 30 | June 6 | June 13 | June 20 |
| 1959 | 95 | 97 | 88 | 98 | 98 |

COMPARATIVE MONTHLY SUMMARIES

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1960 | 92 | 95 | 94 | 92 | 94 | — | — | — | — | — | — | — | — |
| 1959 | 89 | 94 | 95 | 94 | 96 | 96 | 83 | 97 | 92 | 96 | 94 | 80 | 92 |

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

**SUMMARY OF PAPERBOARD STATISTICS**—National Paperboard Assn. Figures

| ITEM | THIS WEEK ENDING June 18, 1960 | LAST WEEK ENDING June 11, 1960 | CUMULATIVE TO DATE Jan. 1 to June 18, 1960, incl. |
|---|---|---|---|
| % Activity | 93% | 96% | 93% |
| **Total** | 317,358 | 327,206 | 7,543,530 |
| **Containerboard—Domestic Use** | 166,469 | 168,199 | 3,861,679 |
| Liner | 111,990 | 111,580 | 2,574,190 |
| Corrugating Material | 48,834 | 50,886 | 1,160,461 |
| Chip & Filler Board | 5,645 | 5,733 | 127,028 |
| **Boxboard—Domestic Use** | 99,125 | 102,387 | 2,370,245 |
| Folding | 58,307 | 64,506 | 1,421,693 |
| Set-Up | 10,469 | 11,931 | 270,745 |
| Special Food Board | 30,349 | 25,950 | 677,807 |
| **Other Paperboard** | 51,764 | 56,620 | 1,311,606 |
| Containerboard Type | 24,516 | 25,676 | 620,613 |
| Boxboard Type | 27,248 | 30,944 | 690,993 |
| **Total Orders** | | | |
| Received | 278,086 | 328,895 | |
| Unfilled End of Week | 443,523 | 482,631 | |


Alvin H. Johnson & Co.

INCORPORATED

Consulting and Designing Paper Mill Engineers

415 LEXINGTON AVENUE NEW YORK 17, N. Y.

PAPER MILL DESIGN PROCESS ENGINEERING POWER PLANTS

STRUCTURAL AND ARCHITECTURAL DESIGN

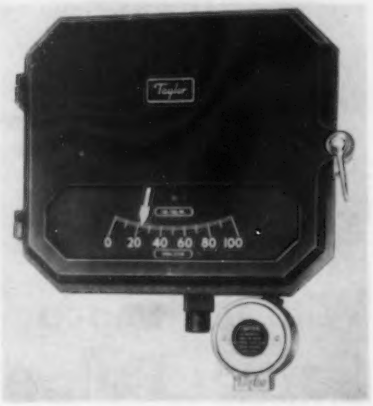
REPORTS APPRAISALS ESTIMATES AND SURVEYS


and multiple slitting production.

Model 140 doctor machine handles rolls up to 30 inches wide, 24 inches in diameter, weighing up to 250 pounds. Its open-end design facilitates loading and unloading. Bench-type Model 120 doctor machine is a portable light-weight unit weighing 500 lbs. It incorporates main features of the other Stanford units, is designed especially for tape or other narrow web rewinding, where guiding and tensioning are particularly important.

## Electronic Transmitter For All Process Variables

The Taylor 726T Universal Electronic Transmitter in an indicating instrument with either an a.c. or d.c.




electrical output. The transmitter is designed to function with any one of several dozen primary elements. Measurements might be absolute, differential, gage, or volumetric pressure; load; shaft position; or temperature.

Primary elements are direct-coupled, within a weatherproof case, to the indicating and transmitting units. Field conversion of the transmitter from one variable measurement to another requires only the interchange of primary elements. Operationally the primary element motivates the transmitter. This motivation is used to directly position the indicating pointer and the core of a differential transformer.

The differential transformer provides a 0 to 200 millivolt, a.c. output. Where d.c. output is desired, or where transmission distances are in excess of 1000 feet, the transformer output is fed through a solid-state, field amplifier.

Where desired the entire assembly may be made explosion-proof. The unit is completely described in Bulletin 98380, Taylor Instrument Companies, Rochester 1, N. Y.

**Ready for the roll.** Notice the absence of a shaft. Roll is moved in between lifting arms which are then lowered and closed under pressure and then elevated to unwinding position.

# LANGSTON SHAFTLESS UNWIND STAND

## Boost your production . . . reduce your slitting and rewinding costs

**Easy, fast, completely safe.** One man does everything. Operating push-button controls, he closes lifting arms, elevates roll, sets brakes.

One man can load the heaviest roll. No heavy shaft to handle. No cone tightening. No couplings to engage. No crane lifting. Just pushbuttons. This is the Langston standard shaftless unwind stand for rewinding and converting applications.

You not only save time, you also get better unwinding. Roll can be positioned laterally by push-button control—even when the machine is running. It's held firmly under pressure for complete safety throughout the unwind. Several braking arrangements can be provided to handle a wide range of grades and conditions. Available extras provide for handling very narrow rolls; for constant tensioning; for automatic braking of idler rolls; for automatic web alignment and side register control; for web oscillation; and for local or remote control.

This new Langston shaftless unwind stand can be used with any make of slitter. Available for maximum roll widths from 36 to 140 in. and diameters from 14 to 84 in. For complete information, write Samuel M. Langston Co., Camden 4, N. J.

SHEAR CUT CLEAN CUT

**LANGSTON** Leadership by design

# PJT NEWS OF SUPPLIERS

J. R. Lill

Peter Huber

W. Ginn

G. T. McBride, Jr.

**J. M. Huber Corp.** has named John R. Lill and Peter Huber as vice presidents.

Mr. Lill will continue to serve as head of the Chemicals Division and as the company's laboratory administrator. His offices are at Havre de Grace, Md. A graduate of Johns Hopkins University, he joined Huber in 1951.

Mr. Huber will be vice president in charge of finance. He graduated from Hamilton College; and joined the company in 1956 after serving with the U. S. Air Force in Germany. His offices are at Red Bank, N. J.

**Oakite Products, Inc.,** has announced the assignment of two representatives to the company's field service staff.

Lon E. Welch, representative in Akron, Ohio, since 1956, has been transferred to Kokomo, Ind., where he replaces Daniel B. Lamb, recently appointed manager of the company's Detroit division. George E. Park, a graduate of the University of Arkansas, has been assigned to Springfield, Mo.

**Dyestuff and Chemical Division.** General Aniline & Film Corp., New York, N. Y., has promoted William G. Sumner to the position of sales engineer at the Chattanooga, Tenn., branch office.

Mr. Sumner has been associated with General Aniline & Film Corp. in the Dyestuff and Chemical Division since 1953. He served as a group leader in the textile section of Antara Chemicals Division's Technical Department from 1953 to 1958. (Antara Chemicals is a sales division.) More recently he has held a similar post at the company's Central Research Laboratories in Easton, Pa.

**Orr Felt & Blanket Co.,** Piqua, Ohio, has announced the appointment of W. Ginn as territorial representative in the West Central territory. This includes Colorado, Iowa, Kansas, Missouri, Oklahoma, Southern Illinois and Southern Indiana.

According to D. C. Spencer, felt sales manager, the addition of Mr. Ginn to the sales staff enables W. Ashton to devote his entire time to covering the state of New York, except for the Buffalo area.

**Texas Gulf Sulphur Co.** has elected Guy T. McBride, Jr., vice president. After having acted as a chemical engineering consultant to the company for several years, Dr. McBride joined Texas Gulf on June 1, 1958, and a year later was named manager of the Research Department.

He was formerly associate professor of chemical engineering and Dean of Students at The Rice Institute, Houston.

**S. W. Hooper Corp.** announces the selection of Vernon L. Tipka as Western United States representative. Mr. Tipka started his career with Crown-Zellerbach Corp. at Camas.

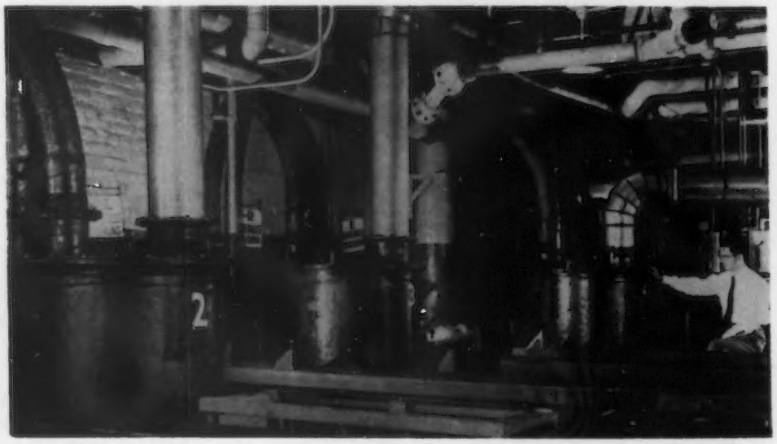
Before returning to the West Coast to establish the Tipka Supply Co., he was for a number of years executive vice president and general manager of the St. Lawrence Paper Corp.

Mr. Tipka will handle the sales and service of the Cowan line of equipment including screens, thickeners, bark presses, agitators and other equipment. He is located at 415 Jackson St., Oregon City, Ore.

**Berkshire Color & Chemical Corp.,** Springfield, Mass., has announced the appointment of the John F. Howell Associates of Delmar, N. Y., as its representative in New York State.

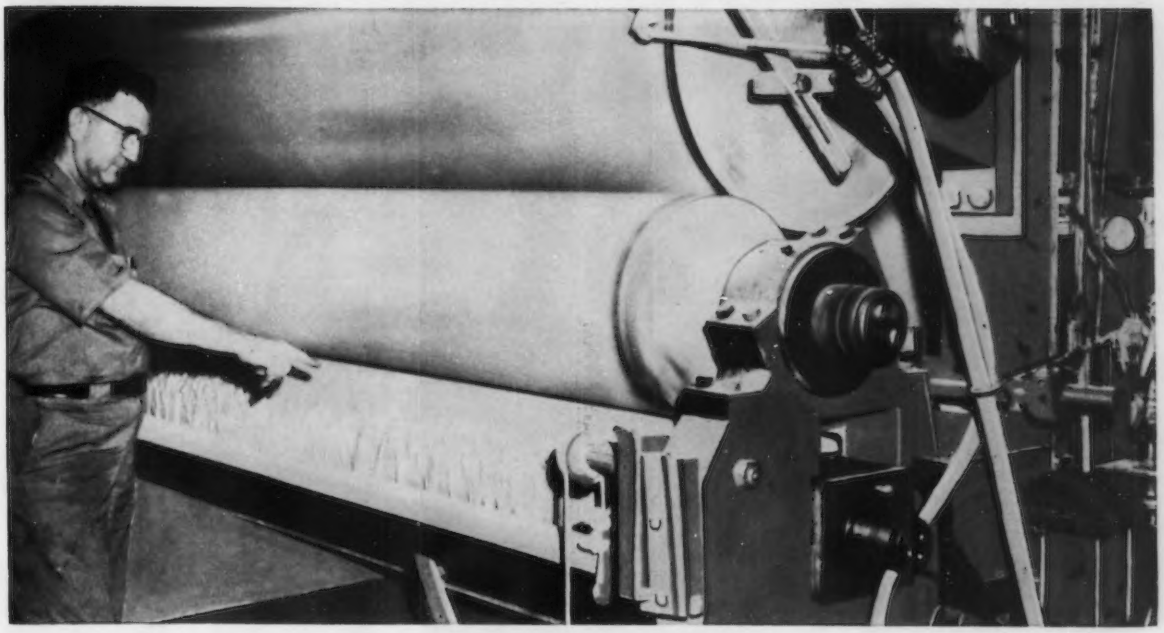
John F. Howell, who heads this organization, was formerly affiliated with the Albany Felt Co.

**Scott Testers, Inc.** has appointed Hermon Marsden exclusive British agent. Mr. Marsden formerly served as technical advisor to the Manchester Branch of Leesona Corp., in



AT EASTMAN KODAK Co., Rochester, N. Y., fiberglass-reinforced polyester ducts and tanks provided an answer to an unusual exhaust problem related to a photographic paper coating operation. They are fire-retardant and corrosion-resistant. Equipment was fabricated by du Verre, Inc., custom fabricators of reinforced plastics for a wide range of industrial applications. Resin selected was Hetron 92, a fire-retardant, self-extinguishing polyester resin produced by the Durez Plastics Division of Hooker Chemical Corp.

# DYLEX® K-52 latex improves quality of enamel-coated paper at WESTVACO



West Virginia Pulp and Paper Company produces more than 1,000,000 tons of paper per year. This year, output of the Fine Papers Division mill in Luke, Maryland, will be doubled with the addition of two giant, fine papermaking machines of the most advanced design.

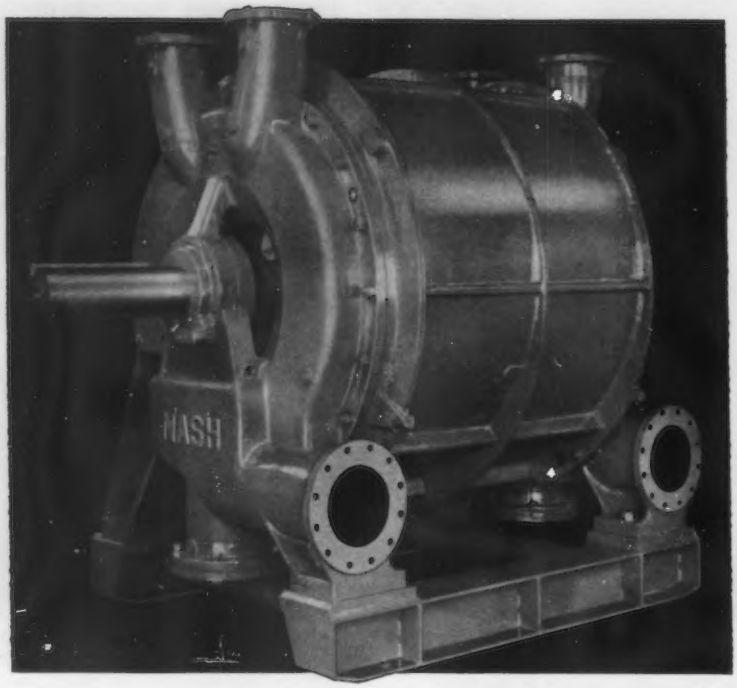
WESTVACO, a pioneer in machine coating, has found a way to improve the quality of their enamel-coated paper. They use styrene-butadiene latices as an additive in the machine-coating operation. Production supervisors at this Fine Papers Division mill report that they are pleased with the uniformity of DYLEX K-52 and its compatibility with other coating materials.

Paper coated with DYLEX K-52 is ideal for modern, high-speed printing presses because it has greater resistance to surface rupture. This coating also gives a higher gloss, excellent mechanical stability, improved pick resistance, and smoother surface which results in better printing reproduction. DYLEX K-52 is easy to apply and can be used alone or with starch or protein.

Get complete information about latex coating! Call our local sales representative, or write for our free pamphlet on DYLEX K-52 . . . complete with charts and test data. Koppers also produces DYLEX K-54 and DYLEX K-85 for the paper industry. Contact Koppers Company, Inc., Plastics Division, Pittsburgh 19, Pennsylvania.

**KOPPERS PLASTICS**

## Just 3 days lost production of a Paper machine can cost more than the vacuum pumps. That makes dependability the essential factor in pump selection. No pump is more dependable than a Nash




Over a thousand leading mills depend on Nash Vacuum Pumps to insure uninterrupted production. Nash Pumps are built to stand the pounding of continuous operation. They are simple. They have no internal parts in wearing contact. They will handle slugs of water or stock. They are designed to operate at the low speeds necessary for long life and reliability. Don't gamble with your production. Install Nash Vacuum Pumps and be safe.

The new Nash 5308-A shown above, has four separate suction inlets, each of which functions independently of the others. This offers the machine operator great flexibility, since these may be used in any desired combination to produce a variety of capacities and vacuums.

**NASH ENGINEERING COMPANY**

SOUTH NORWALK, CONN. U. S. A.


which capacity he had charge of the Unisel Division which handles the sale of Scott Testing Equipment throughout the United Kingdom.

**Penick & Ford, Inc.,** Corn Refining Division, has appointed three new vice presidents. They are: J. E. Killinger, vice president of technical sales service and field development; C. C. Kesler, vice president of research and development; and S. H. Foster, vice president of production. All three men will make their headquarters at the Cedar Rapids, Iowa, plant.

Dr. Killinger joined Penick & Ford in 1929 and later founded the sales service department.

Dr. Kesler has been asociated with the company since 1926.

Mr. Foster joined Penick & Ford in 1933 and has been manager of the Cedar Rapids plant since 1955.

J. E. Killinger

C. C. Kesler

S. H. Foster

H. D. Partridge

**Hooker Chemical Co.,** Niagara Falls, N. Y., has appointed Harold D. Partridge to the newly created position of manager of paper industry development.

Mr. Partridge will direct and coordinate Hooker's technical service and development activities covering use of chlorine, caustic soda, sodium chlorate, and paper treatment resins for such pulp and paper processing operations as chlorine bleaching, chlorine dioxide bleaching and reneration, pulping, sizing, and coating.

He will also be concerned with new product development and, in addition, will maintain liaison on company-sponsored chemical application, development and research projects with W. Howard Rapson.

Mr. Partridge brings to Hooker a

# WET STRENGTH for any type of paper

For practically any paper product—grocery bags, facial tissue, paper toweling, butchers' wrap, or paperboard—you will find that one of these UFORMITE resins will provide the wet strength you need . . . economically and efficiently.

**UFORMITE 700** gives high off-the-machine wet strength without attendant broke recovery problems.

**UFORMITE 711** offers efficient all-round performance at moderate cost.

**UFORMITE 467** provides maximum economy in unbleached grades of paper.

These UFORMITE resins have excellent storage stability. They do not require acid pretreatment or aging before use. Write for our 24-page booklet "UFORMITE Resins for Wet Strength Paper".

*UFORMITE is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.*

*Chemicals for Industry*

**ROHM & HAAS COMPANY**

**THE RESINOUS PRODUCTS DIVISION**

**Washington Square, Philadelphia 5, Pa.**

# UFORMITE

broad background of 21 years' specialized experience in bleaching, pulping and allied phases of pulp and paper technology. He comes to Hooker from the Brown Co., Berlin, N. H., where, as assistant manager of pulp research and development for nearly three years, he was chiefly responsible for upgrading pulp.

Previously, from 1939 to 1957, Mr. Partridge held various research executive positions with Rayonier, Inc., Whippany, N. J.; Alaska Pine and Cellulose, Ltd., Vancouver, B. C., Canada; and Industrial Cellulose Research, Ltd., Hawkesbury, Ont., Canada.

R. W. Munson

A. Ohlander

R. J. Delack

F. A. Gilson

**New Jersey Zinc Co.** has announced the following changes in its sales and purchasing organizations.

Robert W. Munson has been appointed Southern District sales manager in charge of a new sales district, with headquarters in Atlanta. Mr. Munson, formerly assistant Eastern District sales manager, has been a sales representative for the company since 1947.

Alfred Ohlander has been named Pacific District sales manager, with headquarters in Los Angeles.

Robert J. Delack, formerly pigment sales representative of the New York office, has been placed in charge of the sales office in Boston.

Frank A. Gilson has become a pigment sales representative, assigned to the New York Metropolitan area.

**Bulkley Dunton Pulp Co., Inc.,** is soon opening a new sales and distribution office in San Francisco.

Robert M. Van Sant, appointed manager, will take over as soon as premises have been selected.

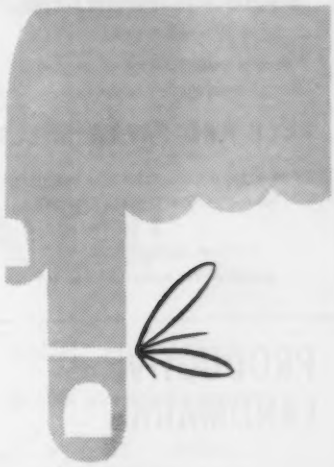
The new office will function in the same manner as Bulkley Dunton's branch office in Kalamazoo established in 1945.

You'll get exceptionally low "first cost"
You'll use minimum power
You'll need less maintenance
with the
Kalamazoo "Side Hill" Washer

These practical slide washers give a better and more effective wash job than other washing methods. They may also be used as thickeners and savealls. These units are designed by Kalamazoo engineers — experts in serving the paper industry for more than 90 years. Our experience enables us to completely prefabricate the units of top quality materials. Installation supervision can be furnished.
Laboratory size units are available for experimental purposes in determining the proper angle and screen mesh.
Write today for information on capacities and cost estimates.

WOOD TANK DIVISION
Kalamazoo TANK & SILO CO.
760 HARRISON ST.
KALAMAZOO, MICH.

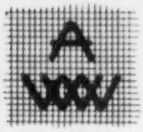
DOCTOR BLADE



*we do* ONE THING

*– and our customers tell us we do it* VERY WELL

APPLETON WIRES



ARE GOOD WIRES!

*leading manufacturer of wires for*

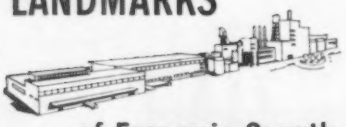
- WRITING PAPERS
- KRAFT PAPERS
- NEWSPRINT
- CARDBOARDS
- WALLPAPER
- TISSUE PAPER
- CIGARETTE PAPER
- BOOK PAPER

*APPLETON WIRE WORKS Corp.*

PLANTS AT APPLETON, WIS. AND MONTGOMERY, ALA.:
INTERNATIONAL WIRE WORKS, MENASHA, WIS. AN AFFILIATED COMPANY

**CHAS. T. MAIN, INC.**
*ENGINEERS*
PROCESS STUDIES, DESIGN, SPECIFICATIONS, CONSTRUCTION SUPERVISION
**PULP AND PAPER MILLS**
STEAM, HYDRAULIC AND ELECTRICAL ENGINEERING REPORTS, CONSULTATION, VALUATIONS
•
BOSTON, MASSACHUSETTS
CHARLOTTE, NORTH CAROLINA

**PRODUCTIVE LANDMARKS**



**of Economic Growth**

Rust has designed and constructed plant facilities increasing pulp and paper production. Ask for details.

THE RUST ENGINEERING CO.
PITTSBURGH 22 • BIRMINGHAM 3

*Spacemastre*®
by
18 28 THE SMITH & WINCHESTER MFG. CO.
THE ELECTRONIC BACKGAUGE CONTROL
**FOR TRIMMERS**
INCREASES PRODUCTION AND ACCURACY
CONTACT
**SMITH & WINCHESTER**
SOUTH WINDHAM, CONN.
SPECIALISTS IN SHEETING & CUTTING EQUIPMENT

# Prices of Fibers

## MARKET WOOD PULP

THIRD QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

**Delivered Basis**

| | U.S. | Canadian | Swedish | Finnish | Norwegian |
|---|---|---|---|---|---|
| Groundwood | $ 82.50/ 90.00 | $82.50/ 90.00 | §$90.00/ — | §$80.00/ — | §$90.00/ — |
| Bleached Gw'd | $ 97.50/100.00 | $97.50/100.00 | | | |
| Kraft, Blchd. | ‡152.00/160.00 | | | | $157.50/ — |
| Kraft, Blchd. Hdwd. | 152.00/ — | | 140.00/ — | | |
| Kraft, Semi-bleached. | 140.00/145.00 | | | | |
| Kraft, Unbl. | 117.50/125.00 | 125.00/130.00 | †125.00/130.00 | 125.00/ — | |
| Sulphite, Blchd. | ‡150.00/155.00 | ‡150.00/155.00 | •155.00/ — | •155.00/ — | 155.00/ — |
| Sulphite, Bl. Hdwd. | 150.00/ — | | | | |
| Sulphite, Unblchd. | 135.00/ — | 135.00/ — | †135.00/ — | •135.00/ — | |
| Sulphite, Unb'l. Gl'sn | | 140.00/ — | †134.00/ — | | |
| Soda, Blchd. | 147.00/150.00 | 150.00/ — | | | |

§ On Dock Atlantic Ports. • Freight allowed. † Varying Freight Allowances.
‡ Depending on Brightness.

## COTTON LINTERS

F.O.B. OIL MILLS
WEEK ENDED JUNE 21

| | Atlanta | Memphis | Dallas | Los Angeles |
|---|---|---|---|---|
| Grade 1 | n.a. | n.a. | n.a. | n.a. |
| 2 | n.a. | n.a. | n.a. | 9.00/ — |
| 3 | $7.50/7.00 | $8.50/7.50 | $7.50/7.00 | 8.50/8.00 |
| 4 | 7.00/6.25 | 7.25/6.25 | 6.50/6.25 | 7.75/ — |
| 5 | 6.25/5.75 | 6.00/5.50 | 6.00/5.50 | 7.50/7.00 |
| 6 | 5.75/4.75 | 5.25/5.00 | 5.25/5.00 | 6.50/4.50 |
| 7 | 4.75/4.25 | 4.50/4.00 | 4.75/4.00 | 4.25/4.00 |

## WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

| | New York | Boston | Chicago | Los Angeles |
|---|---|---|---|---|
| | June 27 | June 27 | June | June |
| No. 1 Mixed Paper | $ 7.00/ 9.00 | 9.00/ 11.00 | 6.00/ — | 12.00/ 13.00 |
| No. 1 News | 12.00/ 13.00 | 12.00/ 13.00 | 13.00/ — | 12.00/ — |
| Overissue News (Lg. size) | 11.00/ 13.00 | 11.00/ 13.00 | 18.00/ — | 18.00/ 19.00 |
| Mill Wrappers | 19.00/ 22.00 | 13.00/ 15.00 | 9.00/ — | 12.00/ 14.00 |
| Old Corrugated Containers | 22.00/ 23.00 | 19.50/ 20.00 | 18.00/ — | 23.00/ — |
| Super Resorted Kraft Paper | 35.00/ 40.00 | — / — | 30.00/ — | 55.00/ — |
| New Double Kr. Ld. Corr. Cuts | 32.50/ 35.00 | 35.00/ — | 35.00/ — | 35.00/ — |
| (Semi-chem. medium) | 47.50/ — | 47.50/ — | 45.00/ — | — / — |
| New 100% Kraft Corr. Cuts | 40.00/ 42.50 | — / — | 57.50/ — | — / — |
| New Br. Kraft, Env. Cuts | 70.00/ 75.00 | 70.00/ 75.00 | 52.50/ — | 55.00/ — |
| New Br. Kr. Bag Waste Prntd. | 55.00/ 60.00 | 55.00/ 60.00 | 52.50/ — | 55.00/ — |
| New Br. Kr. Bag Waste Unprintd. | 60.00/ 65.00 | 65.00/ 75.00 | 60.00/ — | 60.00/ — |
| No. 1 Groundwood Shvs. | 25.00/ 30.00 | 25.00/ 30.00 | 17.00/ — | 32.50/ 35.00 |
| White Newsblanks | 47.50/ 52.50 | 47.50/ 52.50 | 35.00/ — | 55.00/ — |
| No. 1 Soft White Shvs. | 60.00/ 65.00 | 57.50/ 60.00 | 60.00/ — | 75.00/ — |
| Super Soft White Shvs. | 65.00/ 75.00 | 75.00/ 85.00 | 70.00/ — | — / — |
| Hd. White Shvs. | 85.00/ 90.00 | 90.00/100.00 | 85.00/ — | 90.00/ 95.00 |
| Hd. White nv. Cuts | 100.00/105.00 | 105.00/110.00 | 90.00/ — | 110.00/113.00 |
| Col. Tab. Cards | 42.50/ 45.00 | 42.50/ 45.00 | 45.00/ — | 40.00/ 45.00 |
| Manila Tab. Cards | 62.50/ 65.00 | 62.50/ 65.00 | 65.00/ — | 70.00/ 75.00 |
| No. 1 Col. Ledger | 35.00/ 40.00 | 35.00/ 40.00 | 40.00/ — | 27.00/ 29.50 |
| White Ledger | 48.50/ 52.50 | 50.00/ 55.00 | 50.00/ — | 50.00/ 55.00 |
| Mixed Book & Mag.† | 22.00/ 25.00 | — / — | 12.50/ — | — / — |
| No. 1 Books‡ | 16.50/ 19.00 | 14.50/ 16.50 | 27.50/ — | 13.50/ 14.00 |

† Includes Time & Life; no coarse groundwood. § Not to exceed 10% of groundwood.

# NEW REVOLUTIONARY

*High Speed* **ROTABELT**

REGD. TRADE MARK

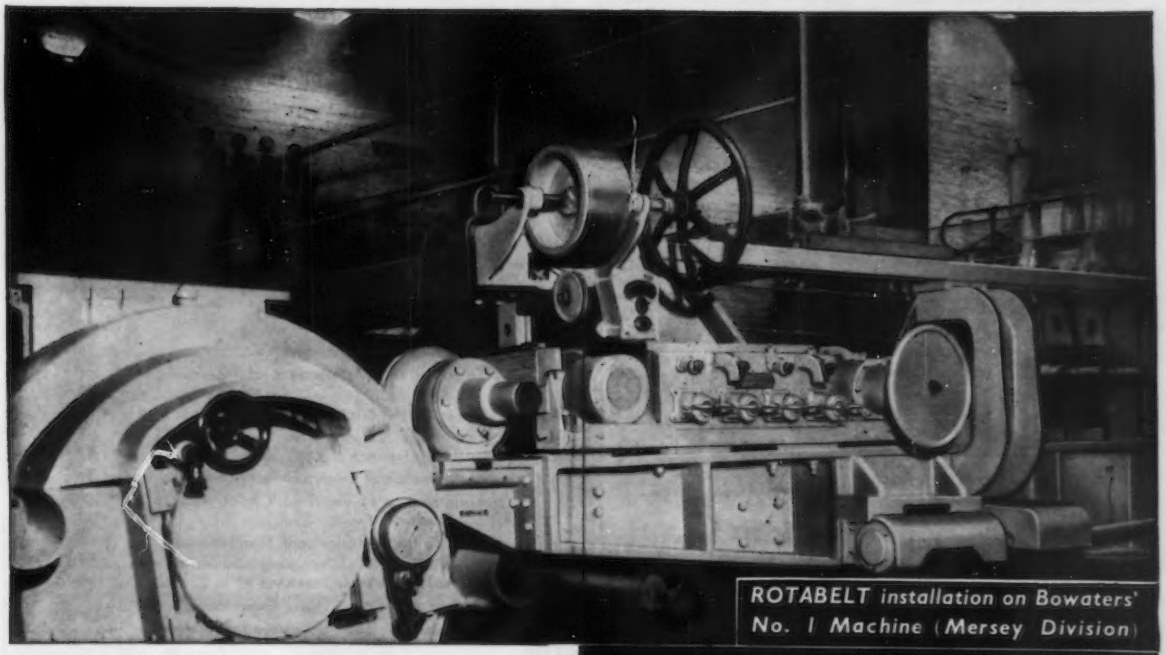
# SUCTION UNIT

- increases wire life
- reduces power consumption
- increases production

*REPORT FROM BOWATERS*

*after more than twelve months in operation:*

1 Wire life has been more than doubled.
2 Couch drive load reduced by 31%.
3 Saving in Labour Cost by fewer wire changes.



*ROTABELT installation on Bowaters' No. 1 Machine (Mersey Division)*

BOWATERS' REPORT : *"We can say after running for one year the ROTABELT has proved to be an outstanding success."*

*Typical High Speed Unit (276" wire)*

## W. P. EVANS & SON LTD

NASHUA—NEW HAMPSHIRE

Concrete Gravity Air-Water-Wash type water Filtration Plant producing, at low cost, water with turbidity 0, color under 5 and iron 0.05 p.p.m. Fe.

**OTHER PRODUCTS**

**Demineralizing Plants**
**Water Softening Plants**
**Pressure Filter Plants**

and

All other types of water treating systems, including strainer valves, air wash systems, filter sand and anthracite beds and all filter repair and replacement parts. Over 50 years experience building new and modernizing old water treatment plants.

*Write for FREE Bulletins*

H&T SERVICE

**HUNGERFORD & TERRY, INC.**

CLAYTON 4, NEW JERSEY

**Jordan Shell and Plug Fillings**

TRADE-MARK

**POSITIVE**

Reg. U. S. Pat. Off.

**High Speed Disc Refiner**

**THE BAHR BROTHERS MFG. CO.**

MARION, INDIANA, U. S. A.

**BEST OF THE CARTOONS**

*from* PAPER TRADE JOURNAL

*Edited by John C. W. Evans*

Eighty pages of "laughs."

The humorous side of things that happen in paper and pulp mills at one time or another.

Get a copy—it will only cost you $1.25 and where could you get so much enjoyment for so little?

$1.25 per copy Postage Prepaid.

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Send postage prepaid, Remittance with order.....copies, *Best of the Cartoons*, Price $1.25;
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**Pulp Paper and Board Mill Maintenance**

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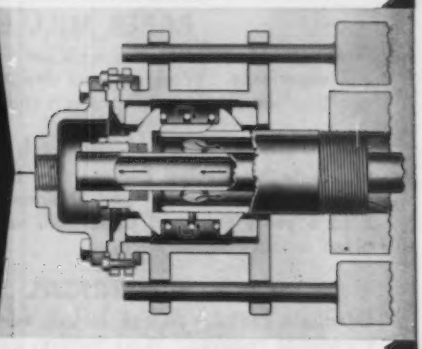

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J-11

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2—PO-5 Rotobag Machines
1—Poly Garment Bag Machine
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1—42" Sheridan Rotary Card Slitter J-4

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1—12 ft. diameter x 45 ft. long

### BEATERS
2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54" x 48", cast iron tubs.

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1—3 roll 84" calender stack.
1—4 roll 72" Calender Stack. (Extra heavy duty).
1—5 roll 82" face.
1—5 roll 86".

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1—96" Murray 4 knife Chipper—anti-friction bearings.
1—84" 10 knife Carthage Chipper. Anti-friction bearings, with motor

### COATER
1—42" Chapman Extrusion Type Coater

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1—Poirier Stainless Steel, new condition

### CRUSHER & HAMMERMILL
1—Murray Chip Crusher.
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1—Jeffrey Shredder.

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1—28" diameter x 84" face.
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2—48" x 60" face with frames, gears & bearings
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6—48" diameter x 130" face.

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1—43" 3-Roll Embossing Calender.
1—51½" 3-roll Smoothing Calender.
1—57" 3-roll Embossing Calender.
1—62" 2-roll Embosser.
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1—Dorr-Oliver Filter, 3 ft. dia. x 6 ft. face, stainless steel construction, with pump.

### FLAT SCREENS
1—12" Plate "Packer".

### HOGS
2—Mitts Merrill Type 15 C. F.

### JORDANS
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1—Noble & Wood Monarch, Type D, anti friction bearings.
1—Noble & Wood Baby Jordan, anti friction bearings, with 20 h.p. motor.

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1—4" face x 36" diameter Saveall
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1—Washer for 5 lb. Beater.
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2—8" x 8" Valley Sheet dryers.
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1—Cady Micrometer.
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2—Elmendorf Tear Testers.
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1—27" High Solid Coater.
1—Noble & Wood Baby Jordan, anti friction bearings, with 20 h.p. motor.

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2—Bird Centrifflers

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4—25 h.p. Westinghouse, totally enclosed, ball bearing. 705 r.p.m.

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2—Chilled iron, chrome plated 9" x 72".
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1—Black-Clawson Hydraslusher, 40 ton capacity, new, never used
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1—Economy Fan Pump 6000 g.p.m., 20' head, 50 h.p. motor.

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1—72" Downingtown Reel, 2 bowl.
1—84" 3 bowl revolving reel.
1—86" 2 bowl reel.
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1—116" Downingtown, 2 bowl, anti friction bearings.
1—123"—3 bowl Revolving Reel.
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1—72" Cameron Type 10 (Shear Cut)
1—82" Cameron Type 10.
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1—12 x 20 Shartle Triplex, with spare parts.

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### SUPER CALENDER STACK
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1—H-3 Nash.
1—K-5 Nash.
2—L-4 Nash.
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2—Brand new Downingtown Iron End Vats, for 42" diameter x 112" face cylinder molds. Will cut down to your size.

### WET MACHINES
1—96" Black-Clawson Wet Machine, new, never used
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1—12 ft. diameter x 181½" face.

**Paddy Ross, Pres.** **J. J. ROSS COMPANY**

**377 Frelinghuysen Ave.** **Tel.—Bigelow 3-3720** **Newark 12, N. J.**

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### Chemists and Engineers — Mechanical, Electrical and Chemical

Large, modern, highly instrumented 500 ton per day kraft pulp and linerboard mill of latest and most modern design now being built at Counce, Tennessee.

Openings available for young engineering and chemistry graduates who have some pulp and paper mill experience. A great opportunity for such men to gain comprehensive experience in a new plant and to progress with the future growth of this operation.

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If you want to learn and grow in the paper industry this is one of your best opportunities.

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**Personnel Department**

**Tennessee River Pulp & Paper Company**

P. O. Box 33 Counce, Tennessee

J-11

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J-11

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Immediate position open in Research and Development Department of absorbent specialty mill located in midwest. Prefer man with degree in chemistry and three years of paper mill experience. Knowledge of saturating papers and saturating resins desirable.

Write to Box #60-135, care of Paper Trade Journal.

J-25

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Large manufacturer of Specialty items in Southeastern Massachusetts has attractive opening for Chemical Engineer with 3 to 10 years' experience in paper or allied field. Position is in Process Development Section of plant employing over 500. Send replies to Box No. 60-138 care Paper Trade Journal giving information on training, experience and salary desired.

J-11

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For applications research on chemicals for new bleaching procedures and new or improved pulping processes. Challenging opportunity to apply theoretical and practical background for development of new and improved methods and for solving important customer problems. Includes research laboratory work and contacts with customers. Prefer applicants with 1 to 10 years experience in paper or cellulose chemistry.

Complete benefit plans. Location in Central New York near the attractive Finger Lakes Area, the Adirondack Mountains, and the Thousand Islands.

Send detailed résumé indicating salary requirement to:

**Director of Research**
**Allied Chemical Corporation**
**Solvay Process Division**
**Syracuse 1, New York**

J-4

### CHEMICAL SPECIALTY SALESMAN

We are looking for a young salesman with a paper background to work in the midwest out of our Chicago office. Position is newly created because of sales expansion in the paper industry and can lead to greater responsibilities. Products include defoamers, surfacants & etc.

***REPLY IN CONFIDENCE***

**M. E. REINER**

**E. F. DREW & CO., INC.**

15 E. 26 St., N. Y. 10, N. Y. J-4

### PAPER COATER

Starch and Gum manufacturer has excellent opportunity for technical man with experience in paper coating. Project includes coating adhesive evaluation in coatings and development formulations; location desirable midwest city and pleasant working conditions.

Address Box 60-137 care Paper Trade Journal.

J-4

## Help Wanted

### PROCESS CONTROL ENGINEER

An established paper company in the East with expanding manufacturing facilities presents an excellent job opportunity for a chemical, mechanical or electrical engineer interested in developing in the field of process control.

Position demands personable, tactful, individual with willingness to progress. Assignments relate to test, raw material evaluation, process and product improvement. Kindly submit resumé and salary requirements.

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J-18

### PAPER AND PULP MANAGEMENT OPPORTUNITY

**M.E., Ch.E., or Chemist**

Expanding national firm has an opening for a man who desires to grow with the paper industry. Training will incorporate all functions of cost control, material expediting, machine scheduling, new product development, etc.

Prefer 3-5 years experience in paper and pulp chemistry or engineering.

This position offers a challenge to the man who desires to know more of the administrative structure of Paper Mill Management.

Company-paid hospitalization, life insurance, profit sharing, vacation and other benefits.

For a confidential interview, send a resume of education and experience to Box 60-136 care Paper Trade Journal.

J-4

### PLANT ENGINEER

Nationally known firm near Boston, Mass., has opening for graduate Mechanical or Chemical Engineer capable of directing machine design and plant projects done by graduate engineers. Prefer man with 10 to 20 years' experience as successful Plant Engineer or assistant, thoroughly familiar with good maintenance practices and direction of maintenance crew through Master Mechanic. Should have experience in coating, laminating and printing equipment. Write Box No. 60-139 care Paper Trade Journal giving full information on experience, education and salary expected.

J-11

## Wanted

### WANTED

45" or 55" Beck (CSH) Sheeter with Auto Piler.
50", 60" or 72" Cameron 26-3A Duplex Slitters.
74" - 84" Seybold Guillotine Cutters.
Address Box 60-134 care Paper Trade Journal. J-4

## Situations Wanted

**EXECUTIVE**
**IMMEDIATELY**
**AVAILABLE**

Age 43, has 24 years experience in pulp, insulating board, & hardboard mills. Experience in pulping agricultural wastes and pulpwood. 10 years as top executive, experience in all phases from research thru production and sales. Desires challenging opportunity with small or large company. Address Box 60-100 care Paper Trade Journal. J-4

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### Machine Clothing Representative

Well established, growing machine clothing manufacturer needs representation in Pennsylvania, New Jersey, Delaware, Virginia and West Virginia. Prefer man with technical or paper manufacturing background and three to five years experience selling to the paper industry in this eastern area. Age 32 to 45. All expenses, salary and bonus. Send resume, photo and salary requirements. Replies held in strict confidence.

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## For Sale

### FOR SALE

Egan Extruder—6" inline with 74" Cammeron Slitter. Reliance drive, chill rolls, turret winder, etc.

**Box No. 60-132**
Care Paper Trade Journal
J-4

### FOR SALE

1—40 ton per day Shartle HYDRA-SLUSHER, complete with 125 h.p. motor (new, never used).

1—96" Black-Clawson WET MACHINE, complete with pumps, drives, etc. (new, never used).

**J. J. Ross Company**
**377 Frelinghuysen Avenue**
Newark 12, N. J. Bigelow 3-3720
J-4

**L O O K through the columns of the CLEARING HOUSE**

## For Sale

### FRENCH BOARD MILL AVAILABLE

There is available in France a small three-machine board mill for sale.

The mill is ideally situated near Paris.

If any one is interested, he had better act fast as the mill is situated on valuable property and should not be available very long.

Address Box 60-128 care Paper Trade Journal. J-4

### FOR SALE

60" Waldron micro jet air coater, with air compressor, Reeves motor drive, new 1951.
32" Waldron reverse roll coater with winder and Reeves drive.
2—42" type 6 Camerons, can be inspected while set up operating.
62" ten 10 model 11A Cameron, new 1950, water cooled unwind, still set up as last operated.
84" Seybold Dayton, can be inspected while operating.
84" Seybold precision, can be inspected while operating.
3—Dryers (R.B.) 60" x 55" face, with single deck frame, gears, bearings.
40" Model C Fales with hydraulic lift.
36" Model C Fales with hydraulic lift, new 1951, used about one year.
2—36" Beck.
1—40" Hamblet, still set up, as last operated.
5—Small Lathes, still set up, as last operated, and other machine tools.
112" Duplex Sheet cutter with layboy and 10 roll backstand.
70" Sheet cutter with Moore and White layboy, 10 roll backstand.
62" Camachine type 28-3 8T duplex shear cut slitter, new 1947, with Cameron constant tension unit.
62" Cameron type 8-5.
105" Langston, type CA, anti friction.
52" Type 10 Model 10A Cameron anti friction.
92" Type 10-6 Cameron, anti friction.
48" Cameron, type 6.
45" Cameron, Cellophane slitter, type 26-3A.
152" Type DA Langston.
160" Type 18 Cameron with water cooled unwind, Cameron constant tension unit.
82" Langston, type B, shear cut slitters.
84" Pusey & Jones shear cut slitter, drums 14 x 84".
7 VG 5 PIV units, 4 to 1 ratio.
6 Dryers 48" diameter x 116" face.

**Frank H. Davis Company, Inc.**
**P.O. Box 231, Cambridge, Mass.**
J-25

### FOR SALE

2—1960 Model Aisle Master Lewis Shepard Electric Lift Trucks. Tri Lift mast to 176" with Side Shifter, 36" Forks and 45" x 2¾" Ram—2,000 lb. lift @ 27½" L.C. Address Box 60-130 care Paper Trade Journal. J-11

### For Sale

1—Dryer Section consisting of 18—36" x 76" Dryers complete with Frames, Gears and Bearings.
5—36" x 82" Dryers, Frames, Gears and Bearings.
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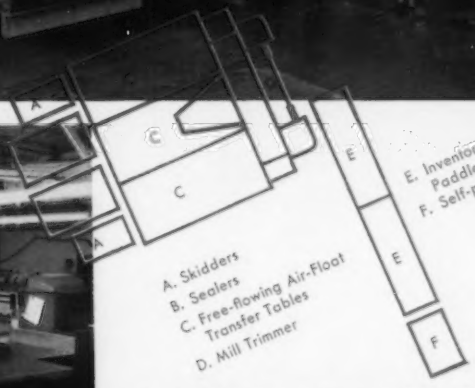


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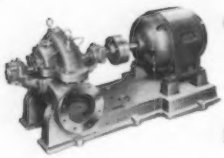

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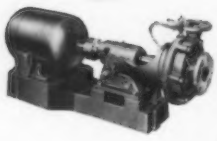

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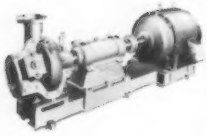

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